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CONTENTS

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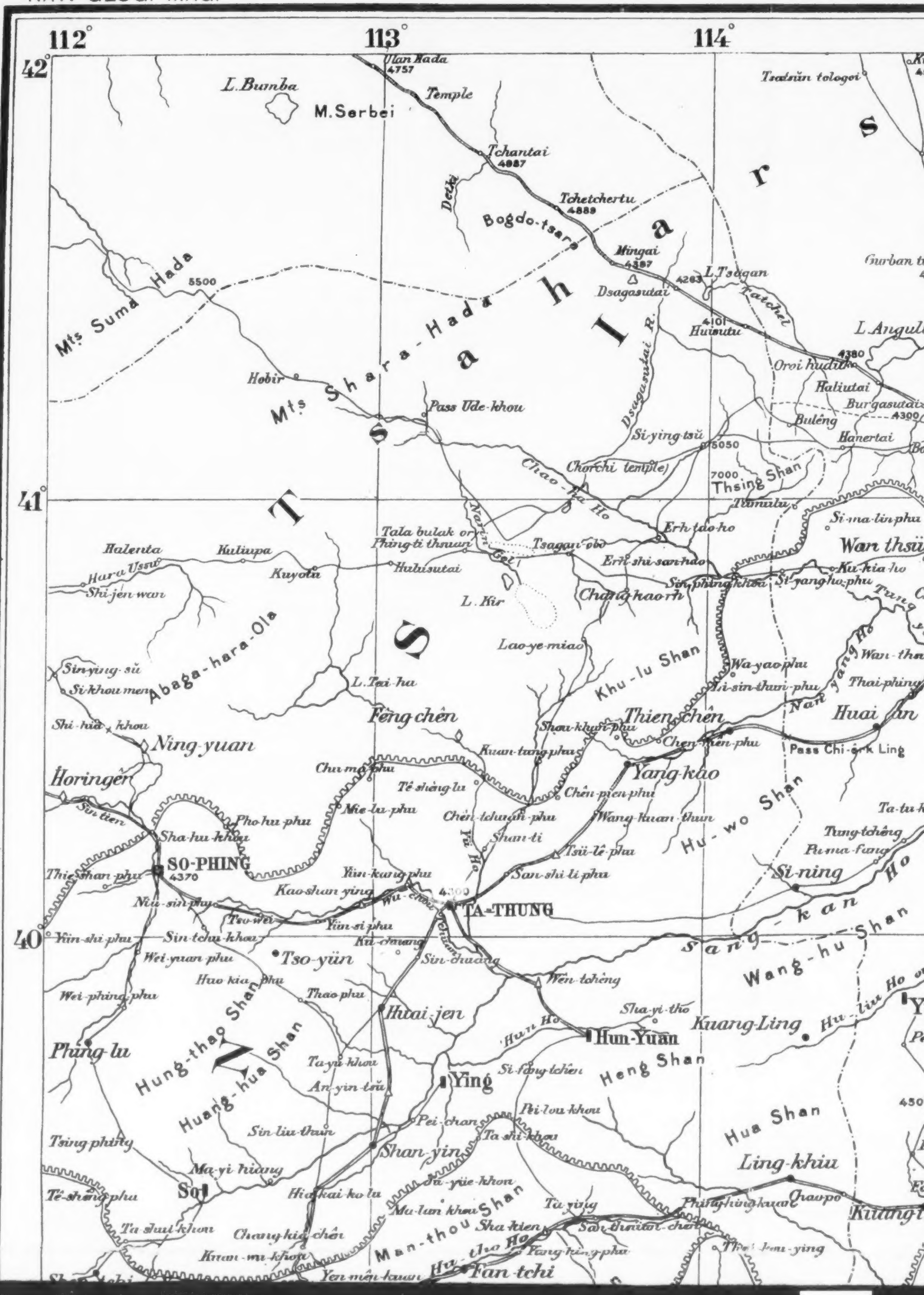
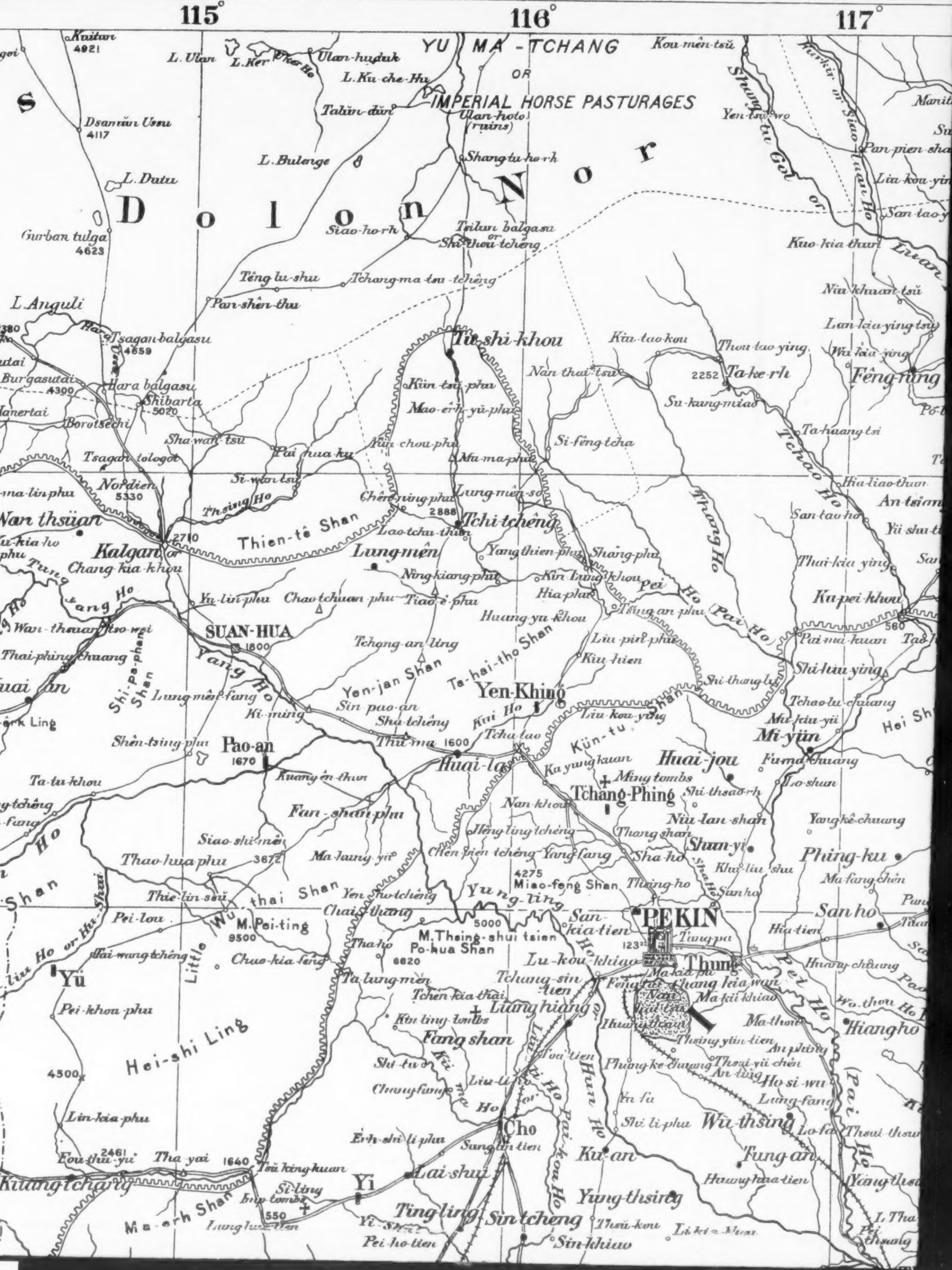
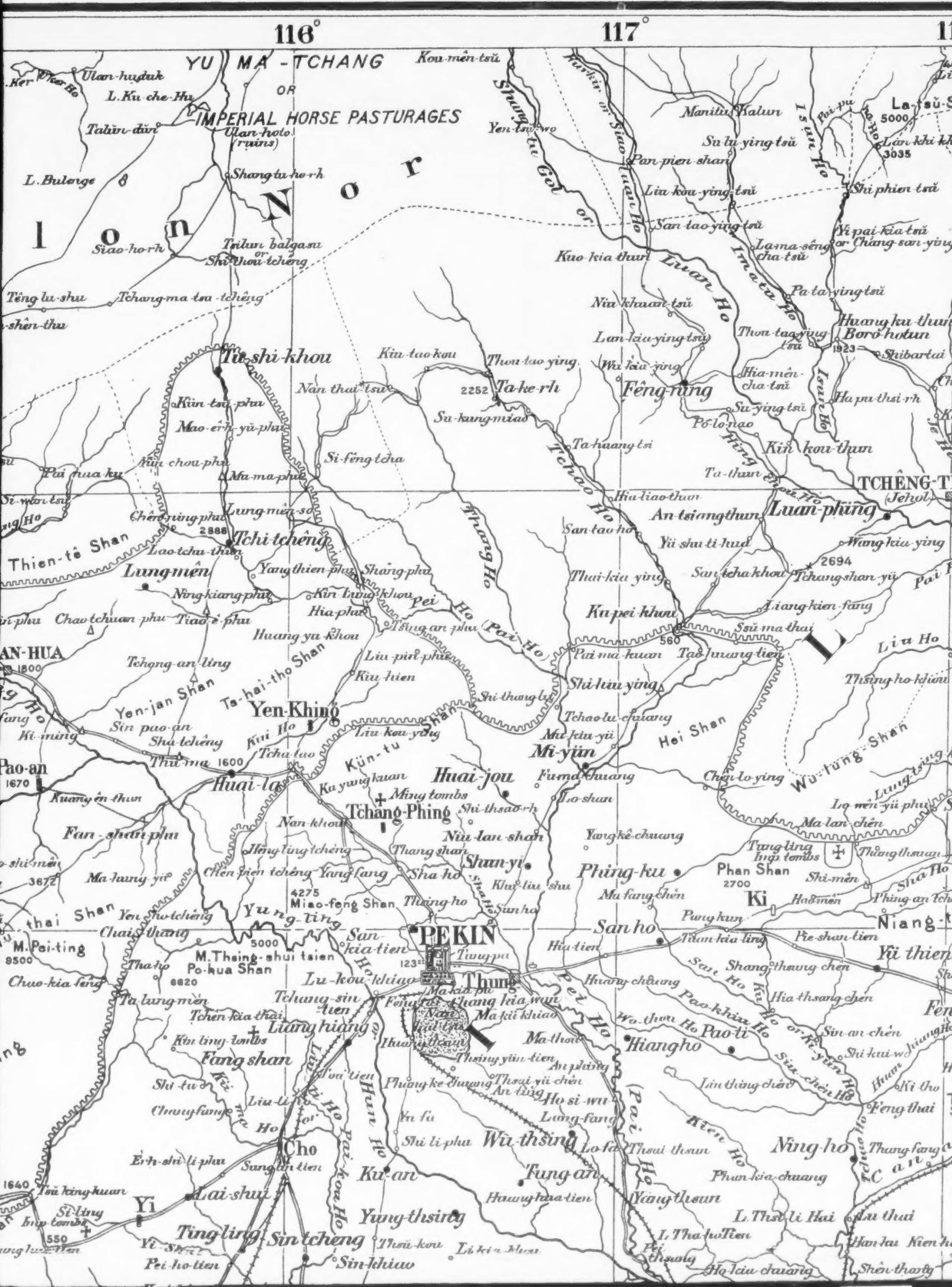


112°
113°
114°
42°
41°
40°
L. Bumba
M. Serbei
Ulan Hada
4757
Temple
Tchantai
4987
Tchetchertu
4889
Bogdo-tsara
Mingai
4387
Dsagasutai
L. Tsagan
4263
4101
Huisutu
Tsatsün tologoi
Gurban
L. Angul
4380
Oroi hudük
Haliutai
Burgasutai
4300
Buleng
Hanertai
Mts Suma Hada
5500
Mts Shara-Hada
Hobir
Pass Ude-khou
Dsagasutai R.
Si-ying-tsü
5050
Chorchi temple
7000
Thsing Shan
Tsahiars
Chao-ha Ho
Tala bulak or Phing-ti thsuan
Tsagan-obo
Erh-tao-ho
Si-ma-lin-phu
Wan thsü
Halenta
Kuliupa
Hara Ussu
Shi-jen-wan
Kuyotu
Hulusutai
Erh-shi-san-hao
Sin-phing-khou
Si-yang-ho-phu
Ku-kia-ho
L. Kir
Chang-hao-rh
Abaga-hara-Ola
Lao-ye-miao
Khu-lu Shan
Wa-yao-phu
Sin-ying-sü
Si-khou-men
L. Tai-ha
Li-sin-thun-phu
Nan yang Ho
Wan-thu
Thai-phing
Shi-hia-khou
Ning-yuan
Fêng-chên
Shan-khun-phu
Thien-chên
Chen-then-phu
Huai an
Pass Chi-erk Ling
Horinger
Chu-ma-phu
Kuan-tang-phu
Yang-kao
Tê-shêng-lu
Chên-pien-phu
Sin tien
Pho-hu-phu
Mie-lu-phu
Chên-tchuan-phu
Wang-kuan-thun
Hu-wo Shan
Ta-tu
Sha-hu-khou
Shan-ti
Tsü-lê-phu
Tung-tchêng
Pu-ma-fang
SO-PHING
4370
Thie-shan-phu
San-shi-li-phu
Si-ning
Yin-kang-phu
Kao-shan-ying
4300
Wu-chou
TA-THUNG
Niu-sin-phu
Tso-wei
Yin-si-phu
Sang-kan Ho
Yin-shi-phu
Sin-tchu-khou
Ku-chuang
Wang-hu Shan
Tso-yün
Sin-chuang
Wei-yuan-phu
Wên-tchêng
Hao-kia-phu
Thao-phu
Wei-phing-phu
Hung-thao Shan
Huai-jen
Sha-yi-tho
Kuang-Ling
Hu-liu Ho
Hun Ho
Hun-Yuan
Phing-lu
Huang-hua Shan
Ta-yü-khou
Heng Shan
Si-fang-tchen
Ying
An-yin-tsü
Pei-lou-khou
Pei-chan
Hua Shan
Tsing-phing
Sin-liu-thun
Ta-shi-khou
Shan-yin
Ling-khiu
Ma-yi-hiang
So
Tê-shêng-phu
Hia-kai-ko-lu
Ju-yüe-khou
Mu-lan-khou
Man-thou Shan
Tu-ying
Phing-hing-kuan
Chao-po
Ta-shui-khou
Chang-kia-chên
Sha-kien
San-thuan-chên
Fang-hing-phu
Kuan-mi-khou
Hu-tho Ho
Yen-mên-kuan
Fan-tchi

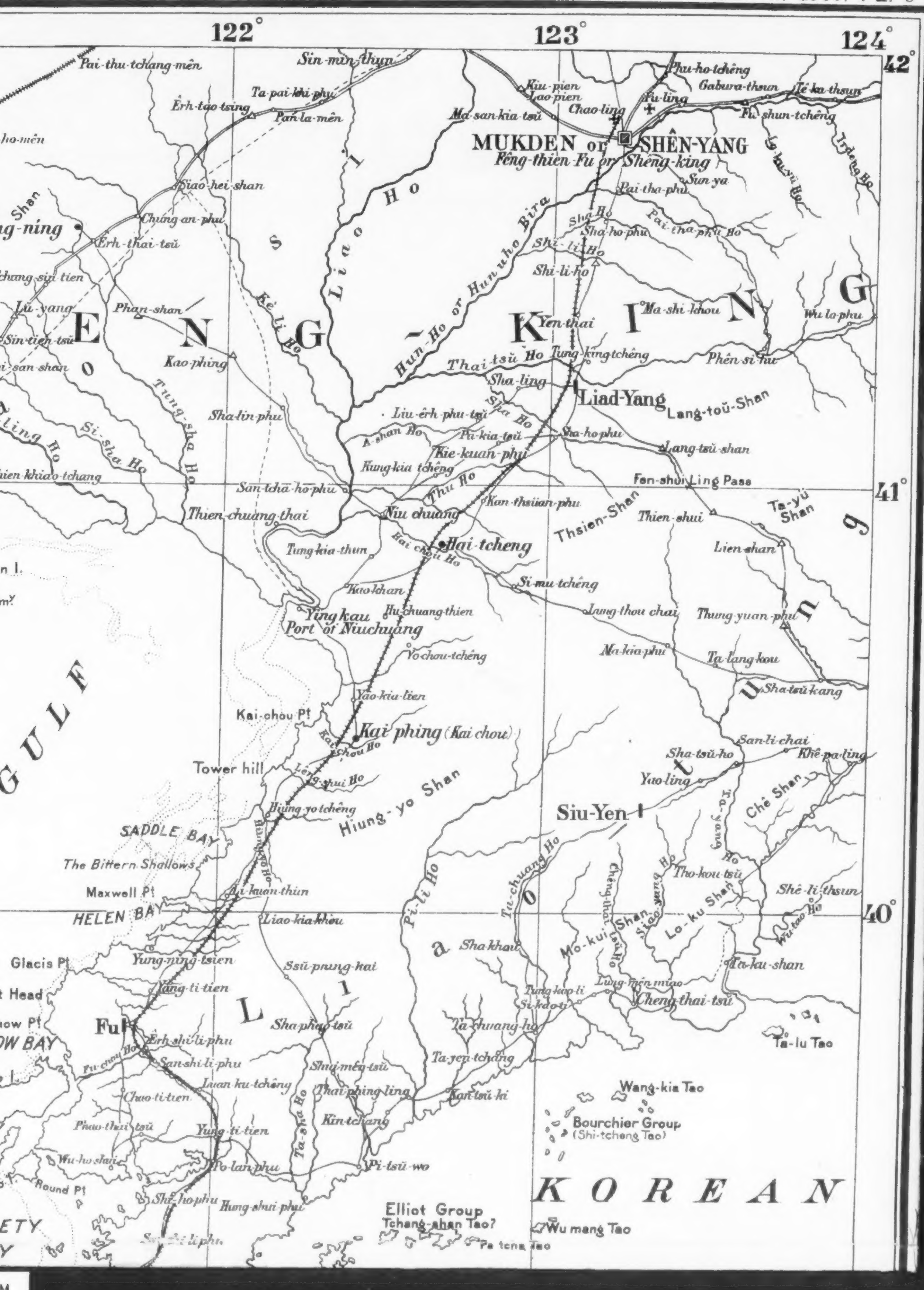

115°
116°
117°
YU MA-TCHANG
OR
IMPERIAL HORSE PASTURAGES
Dolon Nor
L. Ulan
L. Ku-che-Hu
Ulan-hoto (ruins)
Shang-tu-ho-rh
Dsamün Usu
4117
L. Bulenge
L. Datu
Gurban tulga
4623
Siao-ho-rh
Teng-lu-shu
Tchang-ma-tsu-tcheng
Pan-shen-thu
L. Anguli
Tsagan balgasu
4659
Hara balgasu
Shibarta
5020
Burgasutai
4300
Borotsechi
Sha-wan-tsu
Tsagan tologoi
Nordien
5330
Si-wan-tsu
Thsing Ho
Wan thsüan
Kalgan or Chang-kia-khou
2710
Thien-tê Shan
Tu-shi-khou
Kün-tsu-phu
Mao-erh-yü-phu
Kün-chou-phu
Ma-ma-phu
Chen-ning-phu
Lung-men-so
2888
Tchi-tcheng
Lao-tchu-thun
Lung-men
Ning-kiang-phu
Yang-thien-phu
Shang-phu
Kin-tung-khou
Hia-phu
Yu-lin-phu
Chao-tchuan-phu
Tiao-e-phu
Yang Ho
SUAN-HUA
1800
Tchong-an-ling
Huang-yu-khou
Ta-hai-tho Shan
Yen-jan Shan
Sin pao-an
Sha-tcheng
Lung-men-fang
Ki-ming
Shi-pa-phan Shan
Pao-an
1670
Shen-tsing-phu
Ta-tu-khou
Kuang-en-thun
Fan-shan-phu
Thu-ma
1600
Huai-lai
Tcha-tao
Yen-Khing
Kui Ho
Liu-kou-ying
Kün-tu Shan
Kin-tien
Liu-pin-phu
Ka-yung-kuan
Ming tombs
Tchang-Phing
Huai-jou
Shi-thsao-rh
Nan-khou
Heng-ling-tcheng
Nin-lan-shan
Thang shan
Shun-yi
Siao-shi-men
Thao-hua-phu
3672
Ma-lang-yü
Chen-pien-tcheng
Yang-fang
Sha-ho
4275
Miao-feng Shan
Thsing-ho
Yung-ling
Thie-lin-sui
Little Wu thai Shan
M. Pei-ting
9500
Pei-lou
Liu Ho or Hu-Shui
5000
M. Thsing-shui tsien
Po-hua Shan
6620
San-kia-tien
PEKIN
123
Tung-pu
Thung
Chuo-kia-feng
Lu-kou-khiao
Tchung-sin-tien
Feng-tai
Ta-lung-men
Tchen-kia-thai
Lang hiang
Nan Hai tsu
Kün-ling-tombs
Fang shan
Yü
Pei-khou-phu
Hei-shi Ling
4500
Lin-kia-phu
2461
Tha yai
1640
Kuang-tchang
Tsü-king-kuan
Si-ling Imp. tombs
Ma-erh Shan
550
Yi
Lai-shui
Ting-ling
Sin-tcheng
Sin-khiau
Pei-ho-tien
Cho
Sung-lin-tien
Ku-an
Yung-thsing
Hun Ho
Liu-li Ho
Pai-kou Ho
Wu-thsing
Fung-an
Ho si-wu
Lung-fang
An-ling
Ma-thou
Hiang-ho
Pei Ho (Pai Ho)
San-ho
Phing-ku
Ma-fang-chen
Yang-ke-chuang
Mi-yün
Fu-ma-chuang
Lo-shan
Tchao-lu-chuang
Shi-liu-ying
Shi-thang-ku
Pai-ma-kuan
Ku-pei-khou
560
Thai-kia-ying
San-tau-ho
Tchao Ho
Thang Ho
Hia-liao-thun
Ta-hwang-tsi
Su-kung-miao
Ta-ke-rh
2252
Thou-tao-ying
Kin-tao-kou
Nan-thai-tsu
Si-feng-tcha
Feng-ning
Wu-kia-ying
Lan-kia-ying-tsu
Nia-khuan-tsü
Kuo-kia-thun
San-tao-ying
Lia-kou-ying
Pan-pien-shan
Yen-tsü-wo
Shang-tu Gol
Kou-men-tsü
Hei Shan
Hei Shan
An-tsiang
Hia-tien
Huang-chuang
Wu-thou Ho
An-phing
Thsing-yün-tien
Phung-ke-chuang
Thsai-yü-chen
Huang-hua-tien
Yang-thsun
Lo-fa
Thsui-li-phu
Yu-fa
Tou-tien
Liu-li Ho
Erh-shi-li-phu
Chung-fung
Shi-tu
Yi-Shan
Lung-lu-tien
Thsü-kou
Li-kia-tien

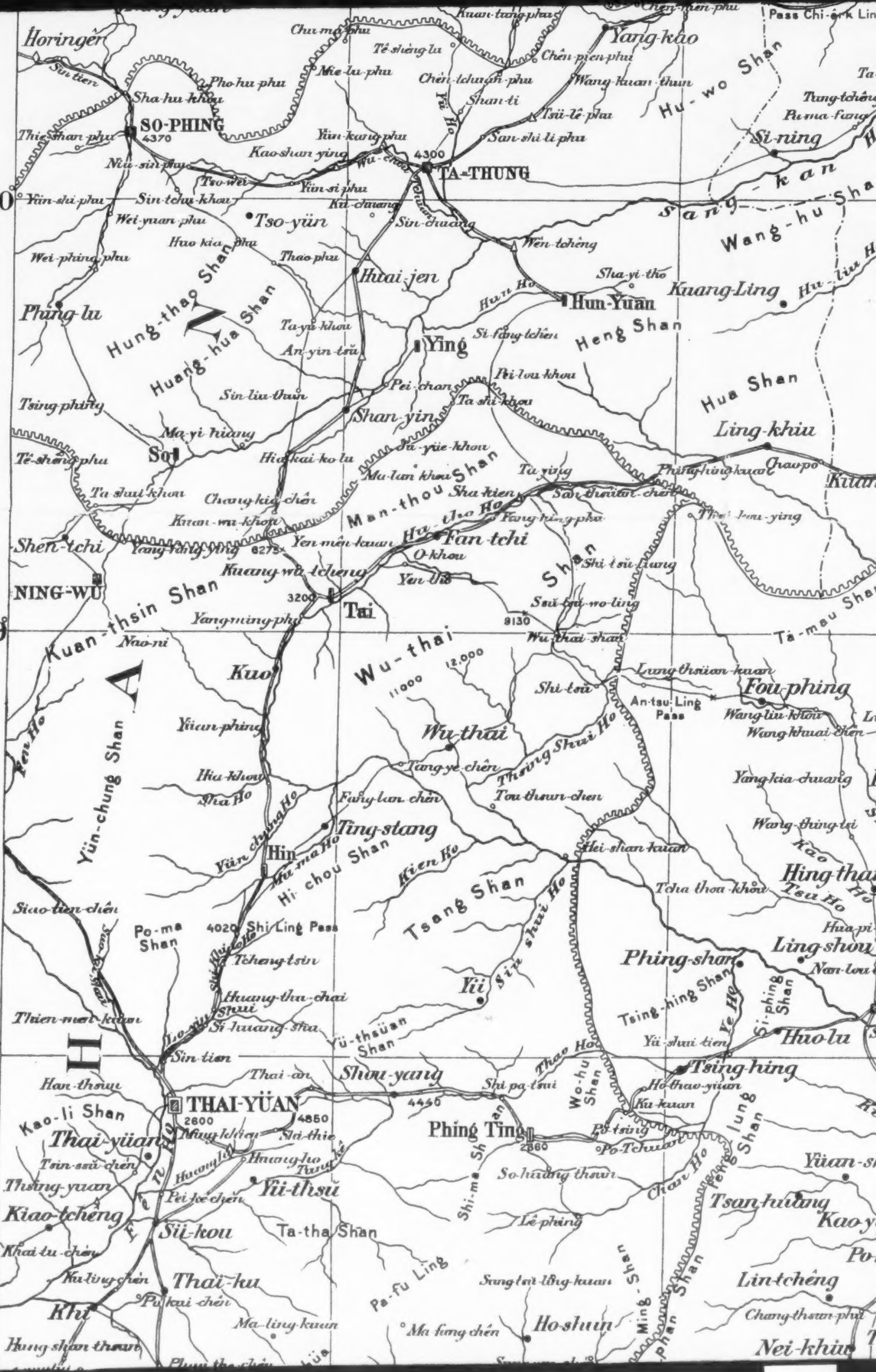

116°
117°
YU MA-TCHANG OR IMPERIAL HORSE PASTURAGES
Kou-mên-tsŭ
Ulan-hudak
L. Ku-che-Hu
Tabin-dün
Ulan-hoto (ruins)
L. Bulenge
Shang-tu-ho-rh
Dolon Nor
Siao-ho-rh
Trilun balgasu or Shi-thou-tchêng
Têng-lu-shu
Tchang-ma-tsu-tchêng
Tu-shi-khou
Kün-tsŭ-phu
Mao-êrh-yü-phu
Kün-chou-phu
Ma-ma-phu
Pai-hua-ku
Lung-mên-so
Chên-ning-phu
2888
Tchi-tchêng
Thien-tê Shan
Lao-tchu-thun
Lung-mên
Ning-kiang-phu
Yang-thien-phu
Shang-phu
Kin-lung-khou
Hia-phu
Chao-tchuan-phu
Tiao-ê-phu
Huang-ya-khou
Tsing-an-phu
Liu-pin-phu
Kiu-tien
Tchong-an-ling
Yen-jan Shan
Ta-hai-tho Shan
Yen-Khing
Sin-pao-an
Sha-tchêng
Ki-ming
Kui Ho
Thu-ma
1600
Tcha-tao
Huai-lai
Pao-an
1670
Kuang-ên-thun
Kün-tu Shan
Ka-yung-kuan
Ming tombs
Tchang-Phing
Nan-khou
Fan-shan-phu
Hêng-ling-tchêng
Chên-pien-tchêng
Yang-fang
Ma-lung-yü
3672
4275
Miao-fêng Shan
Yen-sho-tchêng
Chai-thang
Yung-ting
M. Pei-ting
9500
5000
M. Thsing-shui-tsien
Po-hua Shan
6620
Tha-ho
Chuo-kia-fêng
Ta-lung-mên
Tchên-kia-thai
Kin-ling-tombs
Fang-shan
Liang-hiang
Tchung-sin-tien
Lu-kou-khiao
Shi-tu
Liu-li-Ho
Chung-fang
Kü-ma Ho
Cho
Êrh-shi-li-phu
Sung-lin-tien
1640
Tsŭ-king-kuan
Lai-shui
Yi
Si-ling Imp. tombs
550
Ting-ling
Sin-tcheng
Pei-ho-tien
Sin-khiao
Kü-an
Hun Ho
Pai-kou Ho
Yung-thsing
Thsü-kou
PEKIN
Tung-pa
Thung
Ma-kia-pu
Fêng-tai
Chang-kia-wan
Ma-kü-khiao
Nan-hai-tsŭ
Huang-thsun
Thsing-yün-tien
An-phing
Thsai-yü-chên
An-ting
Ho-si-wu
Lung-fang
Lo-fa
Wu-thsing
Tung-an
Huang-hua-tien
Li-kia-hien
Yen-tsŭ-wo
Shang-tu Gol or Luan Ho
Kurkir or Siao Luan Ho
Manitu Kalun
Su-lu-ying-tsŭ
Pan-pien-shan
Liu-kou-ying-tsŭ
San-tao-ying-tsŭ
Kuo-kia-thun
Luan Ho
Imatu Ho
Lama-sêng-cha-tsŭ
Pa-ta-ying-tsŭ
Niu-khuan-tsŭ
Lan-kia-ying-tsŭ
Thou-tao-ying-tsŭ
Wu-kia-ying
Fêng-ning
Hia-mên-cha-tsŭ
Su-ying-tsŭ
Po-lo-nao
Kün-tao-kou
Nan-thai-tsŭ
Thou-tao-ying
2252
Ta-ke-rh
Su-kung-miao
Si-fêng-tcha
Ta-huang-tsi
Tchao Ho
Thang Ho
Pei Ho (Pai Ho)
Hia-liao-thun
San-tao-ho
Thai-kia-ying
Ku-pei-khou
560
Pai-ma-kuan
Shi-lin-ying
Shi-thung-lu
Tchao-lu-chuang
Mu-kia-yü
Mi-yün
Fu-ma-chuang
Lo-shun
Huai-jou
Shi-thsao-rh
Niu-lan-shan
Thang-shan
Sha-ho
Shun-yi
Khu-liu-shu
Sun-ho
Thsing-ho
Sha Ho
San-kia-tien
Hia-tien
Yang-kê-chuang
Phing-ku
Mu-fang-chên
San-ho
Huang-chuang
Pei Ho
Ma-thou
Hiang-ho
Wo-thou Ho
Pao-ti
Pao-khiu Ho
Lin-thing-chên
Kien Ho
Thsai-thsun
Yang-thsun
Pai Ho
Phan-kia-chuang
L. Tha-lo-Tien
Pei-thsang
Ho-kia-chuang
L. Thsi-li Hai
Ning-ho
Tchao Ho
Lu-thai
Han-ku
Kien-ho
Shên-thang
Thang-fang
Feng-thai
Ki-tho
Huan Hiang Ho
Shi-kui-wo
Sin-an-chên
Siu-chên Ho
Ku Ho or Ki-yün Ho
Hia-thsang-chên
Shang-thsang-chên
San Ho
Pie-shan-tien
Yü-thien
Tuan-kia-ling
Pung-kun
Ki
Hao-mên
Phing-an-tcheng
Niang
Shi-mên
Phan Shan
2700
Tung-ling Imp. tombs
Thung-thsun
Ma-lan-chên
Lo-mên-yü-phu
Lung-tsing
Wu-tung Shan
Chu-lo-ying
Hei Shan
Tao-lin-tien
Ssŭ-ma-thai
Liang-kien-fang
Tchang-shan-yü
San-tcha-khou
2694
Yü-shu-ti-hua
An-tsiang-thun
Luan-phing
Wang-kia-ying
TCHÊNG-TÊ (Jehol)
Ta-thun
Hing Chou Ho
Kin-kou-thun
Ha-pu-thsi-rh
Isun Ho
Huang-ku-thun
Boro-hotun
1923
Shibartai
Shi-phien-tsŭ
Yi-pai-kia-tsŭ or Chang-san-ying
Pai-pu Ho
La-tsŭ Shan
5000
Lan-khi
3035
Liu Ho
Thsing-ho-khiou
Pai Ho

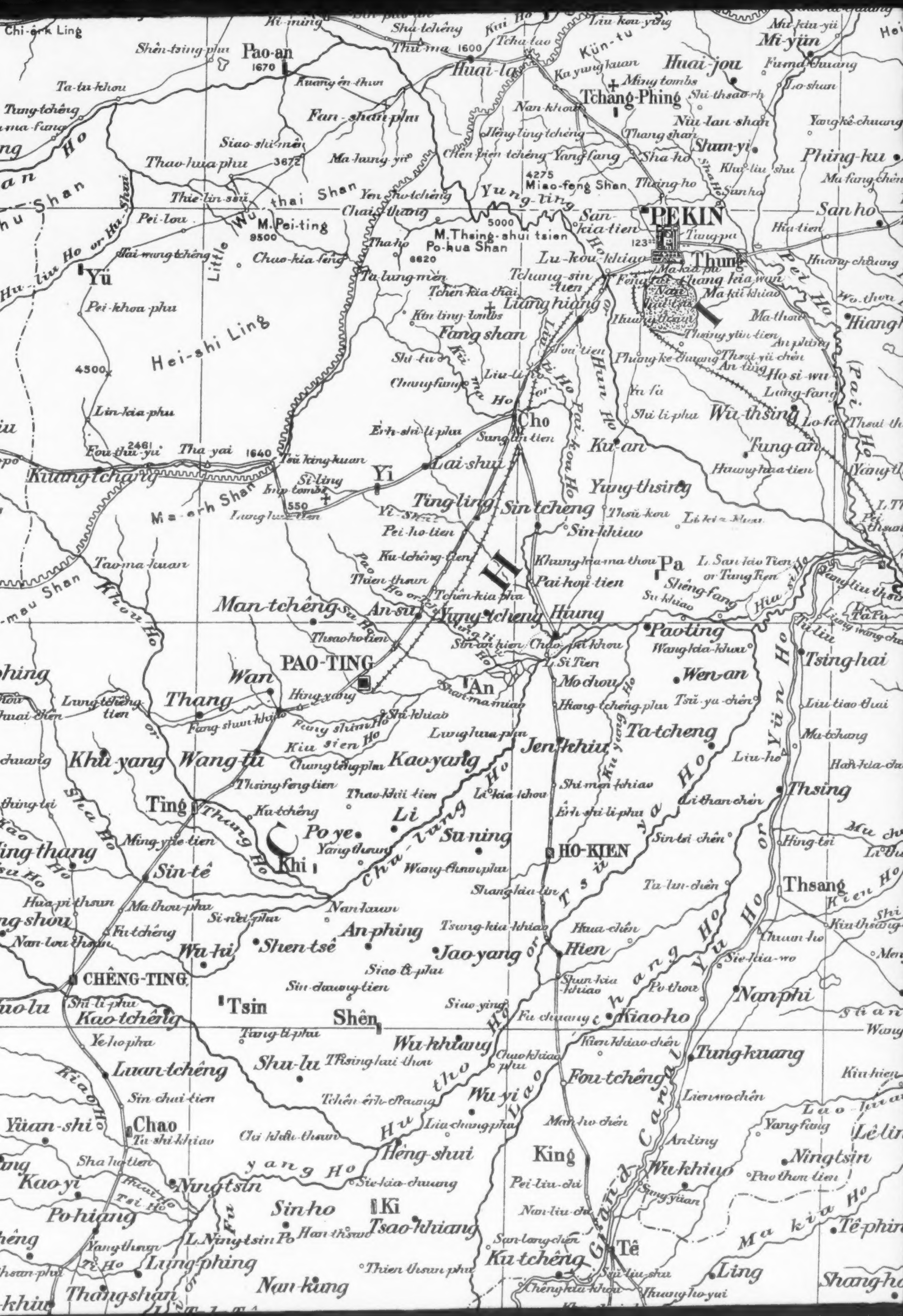

118°
119°
120°
Haratsin
wing) Yi-hêng chung
Pai-tha-tsŭ (the old Ta ning tchêng)
Kien-tchang (Tha-tsŭ-kou)
Haratsin (left wing)
Tumo
Kao-liang kang-tsŭ
Khun-tu-lun Ho
Hartsin-ying-tsŭ
Sirgulin
Nutchuhun baishang
Tchao
Hara-togotu
Halha-baishang
Hashatu-baishang
O Muren
Sê-lêng-ta-bu-nang thsun
Mu-thou-tchêng
Abida-baishang
Taling Ho
Tien-tsŭ
Wu-shi-kia-tsŭ
Pei-kung
San-thai-tsu
Taipuh gol
Thsi-tsien-tung
Huang-thu-liang-tsŭ
Yang-shu-kou
Wo-lung-kia
Ying-thu
San-shi-kia-tsŭ
Êrh-tao-ying-tsŭ
Thou-tao-ying-tsŭ
Pan-ma-kou
Ta-hung-lo Shan
2984
Sin-thai-men
Suburgan Ho
La-tsŭ-Shan
5000
3035
4050
CHÊNG-TÊ (Jehol)
1257
Chung-kuan
Kao-ssŭ-thai
Jê Ho
San-tao-ho
Lao-ye-miao
Ta-hei-Shan
Thsi-kou
1640
Phing Thsüan (Pa-kou)
Ulan-hautsŭ
Lao-kou
Wu-shi-kia
Shang-pan-tchêng
Ta-tsŭ-kou
Pai Ho
Hia-pan-tchêng
Lêng-ling-tsŭ
Lung-shi-mên
Liu Ho
Liu-ho-khou
1060
Khuan Ho
Khuan-tchêng
Tu-shan
Kan-kou 1180
Li-shu-kou-mên
Pai-shi-tsui-mên
PALISADE
WILLOW
Ning Yü
Sha-ho-so-tchêng
San-li-khiao
Chung-hou-so
E-kia-fên
Sand Pt
Cruzier
Nan-thien-mên
Po-lo-thai
Hi-fêng-khou
Ming-shui-thang mên
Shuang-shan-tsŭ
Thsing-shan-ying
Sha-ho-khiao
San-thai-ying
Tsun-Hua
Thai-phing
Pai-tao-tsŭ-phu
Ta-tien-tsŭ
Lo-kia-thun
Kien-tchang-ying
Kie-ling-khou
Chu-tsao-ying
Shi-mên-chai
San Shan
Thsien-wei
Chien-wei
Chung-thsien-so-tchêng
Chien-so
Thao-lin-ying
Thai-thou-ying
Niang-ting Shan
Kuan-thou-Shan
Thsien-an
Lin-yü
Shan-hai-kuan
Ning-hai
Shi Ho
Yü thien
Shên-ko-phu
Wang-fu-thai
Fu-ning
Yü-kuan
Tang-ho
Sha-liu-ho
Sin-tien-tsŭ
Pai-thsao-wa
Sha-ho
Shuang-wang
YUNG-PHING
Niu-thou-yai (Pei-ta-ho)
Rocky Pt
Yü Ho (Pei-ta Ho)
Feng-jun
Chên-tsŭ-chên
Thsing Shan
Luan
Liu-shui-ying
Tchang-li
Kiu-ye
Khai-phing
Hun-tchêng
Phu-ho
Thuan-lin
Thang Shan
Ma-tchêng
Thao-li-chuang
L. Thsi-li
Sü-kê-chuang
Hua-pao-thun
Kao-kê-chuang
Lê-thing
Yang-lan-tho
Chang-kiu-chuang
Kien-ho-chuang
Ma-thou-ying
Ta-thsing-ho
Lao Ho
Thing Ho
Luan Ho
Sü Ho
Kien Ho

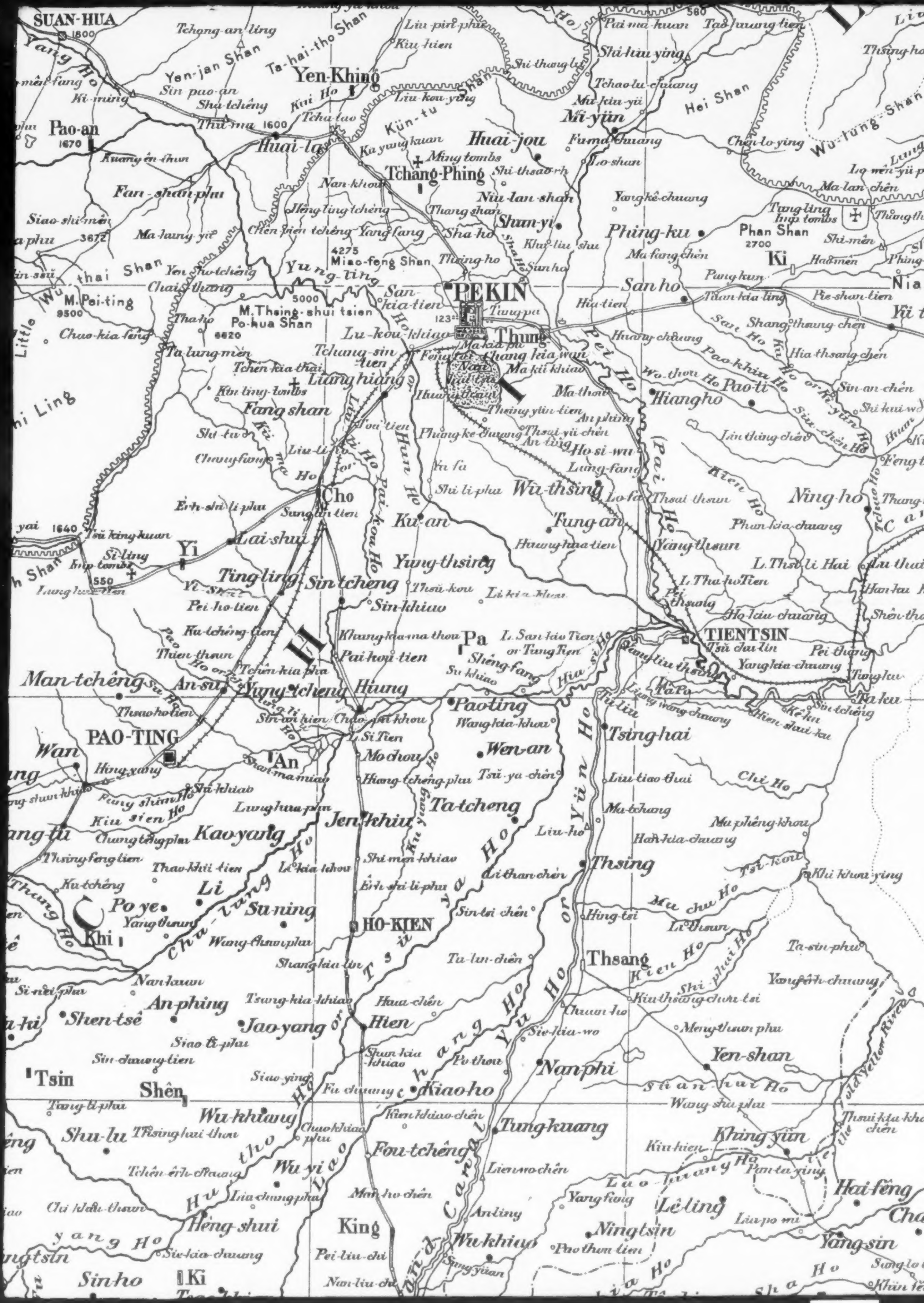
UM


119°
120°
121°
Kuo-liang kang-tsŭ
Pei-nu-khe baishang
Khun-tu-lun Ho
Sirgulin
Nutchuhun baishang
Hartsin-ying-tsŭ
Wu-pa-pin Ho
Thsing-ho-mên
Tchao-yang
(Gurban-suburgan-hoto)
Hara-togotu
Halha-baishang
Kuang-ning
Yi-hêng chung
Hashatu-baishang
Ku-kuan-thai-men
Pai-tha-tsŭ
(the old Ta-ning tchêng)
O Muren
Yi-wu-lü Shan
Kien-tchang
(Tha-tsŭ-kou)
Sê-lêng-ta-bu-nang thsun
Mu-thou-tchêng
Yi
Tchang-sin tie
Hura-hoto
Thsing-tcheng
Tien-tsŭ
Abida-baishang
Lü-yang
Thsi-tsien-tung
Wu-shi-kia-tsŭ
Sin-tien-tsŭ
Pei-kung
San-thai-tsu
Taipuk gol
Sung-tsŭ-ling-mên
Shi-san-shan
Huang-thu-liang-tsŭ
Ta-ling Ho
Siao-ling Ho
Ta-ling-ho
Yang-shu-kou
Wo-lung-kia
Êrh-tao-ying-tsŭ
Suburgan Ho
Shuang-yang
KIN-CHOU
Ying-thu
San-shi-kia-tsŭ
Lung-kua Shan
Sung-shan
Thien-khiao-tch
Ulan-hootsit
1640
Phing Thsüan
(Pa-kou)
Thou-tao-ying-tsŭ
Ta-hung-lo Shan
2984
Hing-shan
King Shan
Pan-ma-kou
Siao-hung-lo Shan
2391
Sin-thai-mên
Kao-khiao
Pi-kia Shan I.
Êrh-thai-tsŭ
Ku-thsin Ho
Hu-lu-Tao Promy.
Li-shu-kou-mên
Lien-shan
Pai-shi-tsui-mên
Thai-tsŭ-shan
Ning Yüan Ho
Kan-kou 1180
Ning Yüan
Tu-shan
Thao-hua Tao I.
Sha-ho-so-tchêng
Ming-shui-thang mên
Kü-hua Tao I.
(SADDLE I.)
San-li-khiao
Warren Pt
Shuang-shan-tsŭ
Thsing-lung Ho
Liang shui Ho
Chung-hou-so
San Shan
Pai-tao-tsŭ-phu
Chu-tsao-ying
E-kia-fên
Sand Pt
Kie-ling-khou
Shi-mên-chai
Thsien-wei
Kien-tchang-ying
Chien-wei
Chung-thsien-so-tchêng
Cruzier Shallows
Thao-lin-ying
Thai-thou-ying
Chien-so
Lin-yü
Shan-hai-kuan
Yang Ho
Fan-kia-tien
Shên-ko-phu
Ning-hai
Shi Ho
Wang-fu-thai
Fu-ning
Yü-kuan
Tang-ho
Shuang-wang
Glacis Pt
YUNG-PHING
Niu-thou-yai (Pei-ta-ho)
Rocky Pt
Fort Head
Yü Ho (Pei-ta Ho)
Luan
Lu-shui-ying
Tchang-li
Fu-chow Pt
Tchao Ho or Shu Ho
Phu-ho
FU CHOW BAY
Luan Ho
An-shan
Thuan-lin
Tchang-hing Tao I.
phu
Thao-li-chuang
L. Thsi li
Hua-pao-thun
HU LU SHAN BAY
Po-lo Tao I.
Lè-thing
Petermann Pt
Yang-lan-tho
Thu êrh Tao I.
Round
Ma-thou-ying
SOCIETY BAY
Ta-thsing-ho
Thsing Ho
ratsin
wing)
Haratsin (left wing)
Tumot
LIU THIAO PIEN OR WILLOW PALISADE
SH
LIAO-TUNG GULF


122°
123°
124°
42°
41°
40°
Sin-min-thun
Pai-thu-tchang-mên
Ta-pai-khi-phu
Êrh-tao-tsing
Pan-la-mên
Ma-san-kia-tsü
Kiu-pien
Lao-pien
Chao-ling
Phu-ho-tchêng
Fu-ling
Gabura-thsun
Té-ka-thsun
Fu-shun-tchêng
MUKDEN or SHÊN-YANG
Fêng-thien Fu or Shêng-king
Sun-ya
Pai-tha-phu
Siao-hei-shan
Chung-an-phu
Êrh-thai-tsü
Liao Ho
Hun-Ho or Hunuho Bira
Sha Ho
Sha-ho-phu
Pai-tha-phu Ho
Shi-li Ho
Shi-li-ho
Lü-yang
Phan-shan
Sin-tien-tsü
Kao-phing
Kê Li Ho
Ma-shi-khou
Yen-thai
Wu-lo-phu
Thai-tsü Ho
Tung-king-tchêng
Phên-si-hu
Sha-ling
Liao-Yang
Lang-toü-Shan
Tung-sha Ho
Si-sha Ho
Sha-lin-phu
Liu-êrh-phu-tsü
A-shan Ho
Pi-kia-tsü
Sha-ho-phu
Kie-kuan-phu
Lang-tsü-shan
Kung-kia tchêng
San-tcha-ho-phu
Thu Ho
Fen-shui Ling Pass
Thien-chuang-thai
Niu chuang
Kan-thsüan-phu
Thsien-Shan
Thien-shui
Ta-yü Shan
Tung-kia-thun
Hai-tcheng
Hai-chou Ho
Lien-shan
Kao-khan
Si-mu-tchêng
Ying-kau
Port of Niuchuang
Hu-chuang-thien
Lung-thou chai
Thung-yuan-phu
Yo-chou-tchêng
Ma-kia-phu
Ta-lang-kou
Yao-kiu-tien
Sha-tsü-kang
GULF
Kai-chou Pt
Kai phing (Kai chou)
Kai-chou Ho
San-li-chai
Sha-tsü-ho
Khê-pa-ling
Tower hill
Lêng-shui Ho
Yao-ling
Hiung-yo Shan
Hiung-yo-tchêng
Che Shan
Siu-Yen
SADDLE BAY
Ta-yang Ho
The Bittern Shallows
Pi-li Ho
Ta-chuang Ho
Chêng-thai-tsü Ho
Tho-kou-tsü
Maxwell Pt
Ai-kuan-thun
Shê-li-thsun
Lo-ku Shan
HELEN BAY
Liao-kia-khou
Siao-yang Ho
Mo-kui Shan
Wu-tao Ho
Glacis Pt
Sha-khou
Ta-ku-shan
Yung-ning-tsien
Ssü-pung-kai
Lung-mên-miao
Tung-kao-li
Si-kao-li
Chêng-thai-tsü
Yang-ti-tien
Fu
Sha-phao-tsü
Ta-chuang-ho
Ta-lu Tao
Êrh-shi-li-phu
San-shi-li-phu
Ta-yen-tchêng
Fu-chou Ho
Shui-mên-tsü
Kuan ku-tchêng
Chao-ti-tien
Thai-phing-ling
Kan-tsü-li
Wang-kia Tao
Phao-thai-tsü
Yung-ti-tien
Kin-tchang
Bourchier Group
(Shi-tcheng Tao)
Ta-sha Ho
Wu-ho-slai
Po-lan-phu
Pi-tsü-wo
Round Pt
KOREAN
Shi-ho-phu
Hung-shui-phu
Elliot Group
Tchang-shan Tao?
Wu mang Tao
Pa tcna Tao
SHÊNG-KING
Liao-tung


Horingêr
Sin tien
Sha-hu-khou
SO-PHING
4370
Pho-hu-phu
Chu-ma-phu
Tê-shêng-lu
Kuan-tang-phu
Chên-pien-phu
Yang-kao
Chên-tchuan-phu
Wang-kuan-thun
Shan-ti
Tsü-lê-phu
Yü Ho
Yün-kang-phu
San-shi-li-phu
Kao-shan-ying
4300
TA-THUNG
Hu-wo Shan
Pass Chi-êrk Lin
Tung-tchêng
Pu-ma-fang
Si-ning
Sang-kan
Wang-hu Shan
Thie-shan-phu
Niu-sin-phu
Tso-wei
Yün-si-phu
40
Yün-shi-phu
Sin-tchu-khou
Ku-chuang
Wei-yuan-phu
Tso-yün
Sin-chuang
Wên-tchêng
Huo-kia-phu
Wei-phing-phu
Thao-phu
Hwai-jen
Sha-yi-tko
Kuang-Ling
Hun-Yuan
Hun Ho
Phing-lu
Hung-thao Shan
Huang-hua Shan
Ta-yü-khou
An-yin-tsü
Ying
Si-fang-tchên
Heng Shan
Pei-lou-khou
Pei-chan
Ta-shi-khou
Hua Shan
Tsing-phing
Sin-liu-thun
Shan-yin
Ma-yi-hiang
Ling-khiu
Tê-shêng-phu
So
Hia-kai-ko-lu
Su-yüe-khou
Mu-lan-khou
Man-thou Shan
Ta-ying
Chao-po
Sha-kien
San-thuitsu-chên
Ta-shui-khou
Chang-kia-chên
Kuan-ma-khou
Fang-hing-phu
Shen-tchi
Yang-fang-ying
6275
Yen-mên-kuan
Hu-tho Ho
Fan-tchi
O-khou
Shi-tsü-liang
NING-WU
Kuang-wu-tchêng
Yen-thi
Kuan-thsin Shan
3200
Tai
Ssü-tsü-wo-ling
Yang-ming-phu
9130
Wu-thai-shan
Ta-mau Shan
39
Nao-ni
Wu-thai
12,000
11000
Kuo
Lung-thsüan-kuan
Shi-tsü
Fou-phing
An-tsu-Ling Pass
Wang-liu-khou
Wang-khuai-chên
Fen Ho
Yüan-phing
Wu-thai
Thsing Shui Ho
Tang-ye-chên
Hia-khou
Sha Ho
Tou-thsun-chen
Yang-kia-chuang
Yün-chung Shan
Fang-lan-chên
Ting-siang
Wang-thing-tsi
Yün-chung Ho
Hin
Mu-ma Ho
Hi-chou Shan
Kien Ho
Hei-shan-kuan
Hing-thai
Tsang Shan
Tcha-thou-khou
Siao-tien-chên
Po-ma Shan
4020
Shi Ling Pass
Tchêng-tsin
Ling-shou
Nan-lou
Phing-shan
Huang-thu-chai
Yü
Sin shui Ho
Tsing-hing Shan
Si-phing Shan
Ye Ho
Thien-men-kuan
Si-huang-sha
Yü-thsüan Shan
Yü-shui-tien
Huolu
38
Sin-tien
Thao Ho
Tsing-hing
Han-thsun
Thai-an
Shou-yang
Shi-pa-tsui
Ho-thao-yüan
Wo-hu Shan
Ku-kuan
Kao-li Shan
THAI-YÜAN
2600
4850
4450
Phing Ting
2860
Po-tsing
Po-Tchuan
Fen Ho
Thai-yüan
Sü-thie
Tsin-ssü-chên
Yü-thsü
So-huang-thsun
Chan Ho
Feng Shan
Yüan-shi
Thsing-yuan
Pei-ko-chên
Tsan-huang
Kiao-tchêng
Sü-kou
Ta-tha Shan
Lê-phing
Kao-yi
Khai-tu-chên
Shi-ma Shan
Thai-ku
Pa-fu Ling
Sang-tai-ling-kuan
Ming Shan
Lin-tchêng
Ku-ling-chên
Pu-kai-chên
Khi
Ma-ling-kuan
Ma-fang-chên
Ho-shun
Chang-thsun-phu
Hung-shan-thsun
Nei-khiu
H
A
N

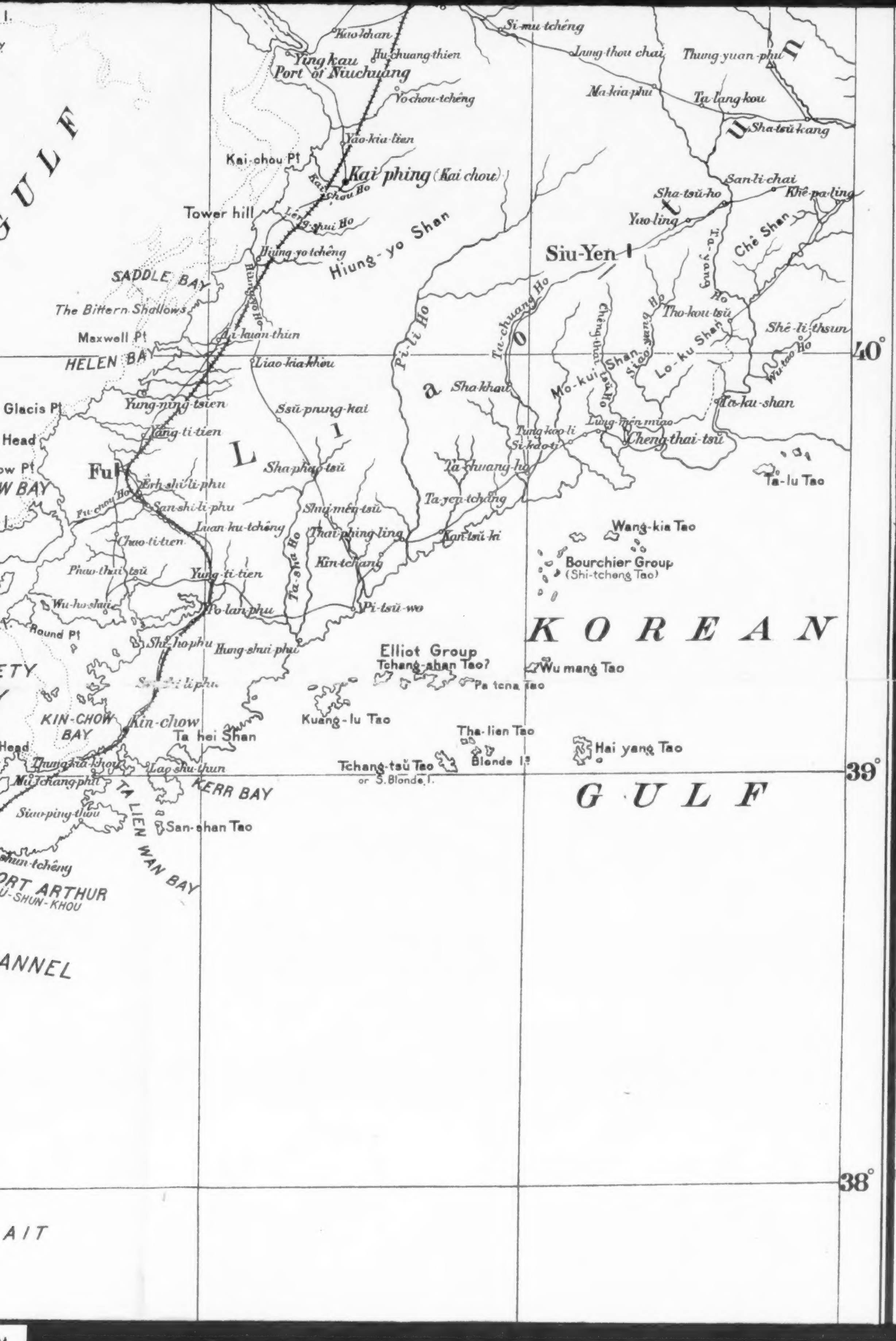

Chi-ërk Ling
Pao-an
1670
Shên-tsing-phu
Kuang-in-than
Thu-ma
1600
Shu-tchêng
Huai-lai
Tcha-tao
Kün-tu
Liu-kou-ying
Ka yung kuan
Ming tombs
Tchang-Phing
Huai-jou
Mi-yün
Mu-kiu-yü
Fu-ma-chuang
Shi-thsao-ch
Ko-shan
Ta-tu-khou
Tung-tchêng
Fan-shan-phu
Nan-khou
Hêng ling tchêng
Thang shan
Niu-lan-shan
Shun-yi
Yang-kê-chuang
Siao-shi-mên
Thao-hua-phu
3672
Ma-lung-yü
Chên fien tchêng
Yang fang
Sha-ho
Phing-ku
Ma fang chên
4275
Miao-fêng Shan
Thsing-ho
Sanho
Thie-lin-ssü
Yen-Sho-tchêng
Yung-ting
Chai-thang
San-kia-tien
PEKIN
San ho
Hu-shan
Pei-lou
Little Wu thai Shan
M. Pei-ting
9500
5000
M. Thsing-shui tsien
Po-hua Shan
Tha-ho
6620
123
Tung-pa
Thung
Hu-tien
Hu-liu Ho or Hu-Shui
Tai-mung-tchêng
Chao-kia-feng
Lu-kou-khiao
Hung-chuang
Yü
Ta-lung-mên
Tchung-sin tien
Fêng-tai
Chang kia wan
Ma-kii khiao
Pei Ho
Tchên-kia-thai
Liang hiang
Nan yuan
Hiang
Pei-khou-phu
Kin-ling-tombs
Ma-thou
Hei-shi Ling
Fang shan
Thsing-ylin-tien
Shi-tu
Hun Ho
Phing-ke-chuang
Thsai-yü-chên
An-ting
Ho si wu
4500
Chung-fung
Liu-li
Liu-li Ho
Lung-fang
Ya fa
Ho
Cho
Shi li phu
Wu-thsing
Lo-fa
Lin-kia-phu
Êrh-shi-li-phu
Sung lin tien
Ku-an
Tung-an
2461
Tou-thu-yü
Tha-yai
1640
Tsü king kuan
Lai-shui
Kuang-tchang
Si-ling
Yi
Hwang-hua-tien
Imp. tombs
Yung-thsing
Ma-erh Shan
550
Ting-ling
Sin-tcheng
Thsü-kou
Lung-lua-tien
Yi-Shui
Sin-khiao
Pei-ho-tien
Tao-ma-kuan
Ku-tchêng-tien
Khung-kia-ma-thou
Pa
H
Pao Ho
Thien-thsun
Pai-kou-tien
Shêng-fang
-mau Shan
Tchên-kia-phu
Su-khiao
Man-tchêng
An-su
Yung-tcheng
Hung
Pao-ting
Tsing-hai
Thsao-ho-tien
Sin-an-kien
Chao-pei-khou
Wang-kia-khou
PAO-TING
Mo-chou
Wen-an
Wan
An
Hing-yang
Thang
Lung-tchêng tien
Hiang-tchêng-phu
Tsü-ya-chên
Liu-tiao-thai
Fang-shun-khiao
Shi-khiao
Fung shun Ho
Ta-tcheng
Ma-tchang
Kiu sien Ho
Lung-hua-phu
Jen-khiu
Khü-yang
Wang-tu
Chung-tang-phu
Kao-yang
Liu-ho
Thsing-fêng-tien
Thao-khü-tien
Li-kia-thou
Shi-mên-khiao
Thsing
Ting
Ku-tchêng
Li
Êrh-shi-li-phu
Li-than-chên
Thang Ho
Po-ye
Su-ning
Sin-tsi-chên
Hing-tsi
Ming-yüe-tien
Yang-thsun
HO-KIEN
ing-thang
Sin-tê
Khi
Wang-thao-phu
Shang-kia-lin
Tsü ya Ho
Ta-lin-chên
Thsang
Hua-pi-thsun
Ma-thou-phu
Nan-kuan
Si-nei-phu
Thsun-ho
Fu-tchêng
An-phing
Tsung-kia-khiao
Hua-chên
Nan-lou-thsun
Wu-ki
Shen-tsê
Jao-yang
Hien
Sie-kia-wo
CHÊNG-TING
Siao-ti-phu
Shun-kia khiao
Po-thou
Nan-phi
Sin-chuang-tien
Shi-li-phu
Tsin
Siao-ying
Fu-chuang
Kiao-ho
Kao-tchêng
Shên
Tang-li-phu
Wu-khiang
Ye-ho-phu
Kien-khiao-chên
Tung-kuang
Chuo khiao phu
Luan-tchêng
Shu-lu
Thsing-lai-thsun
Fou-tchêng
Kin-hien
Sin-chai-tien
Tchên-êrh-chuang
Wu-yi
Lien-wo-chên
Yüan-shi
Chao
Chi-khiu-thsun
Liu-chang-phu
Man-ho-chên
Yang-fang
Lê-lin
Ta-shi-khiao
Hêng-shui
King
An-ling
Ningtsin
Sha-ho-tien
Hu tho Ho
Lao Ho
Grand Canal
Yü Ho
Wu-khiao
Pao-thou-tien
Kao-yi
Ningtsin
yang Ho
Sie-kia-chuang
Pei-liu-chi
Sang-yüan
Po-hiang
Sin-ho
Ki
Tsao-khiang
Nan-liu-chi
Ma kia Ho
Tê-phin
L. Ning-tsin Po
Han-thsun
San-lang-chên
Tê
Yang-thsun
Lung-phing
Thien-thsan-phu
Ku-tchêng
Ling
Shang-ho
Thangshan
Nan-kung
Chêng-kia-khou
Sui-liu-shu
Thung-ho-yui


SUAN-HUA
1800
Yang Ho
Tchong-an-ling
Ta-hai-tho Shan
Yen-jan Shan
Sin pao-an
Sha-tchêng
Yen-Khing
Ki-ming
Pao-an
1670
Thu-ma
1600
Huai-lai
Kuang-ên-thun
Fan-shan-phu
Siao-shi-mên
3672
Ma-lang-yü
Liu-pin-phu
Kiu-tien
Liu-kou-yang
Tcha-tao
Kün-tu Shan
Ka-yung-kuan
Ming tombs
Tchang-Phing
Nan-khou
Hêng-ling-tchêng
Chên-tien-tchêng
Yang-fang
4275
Miao-feng Shan
Shi-thang-li
Pai-ma-kuan
Tao-huang-tien
Shi-hia-ying
Tchao-lu-chuang
Mi-yün
Hei Shan
Huai-jou
Fu-ma-chuang
Lo-shan
Shi-thsao-rh
Niu-lan-shan
Shun-yi
Yang-kê-chuang
Sha-ho
Thang-shan
Phing-ku
Ma-fang-chên
Sun-ho
Chên-lo-ying
Wu-tung Shan
Ma-lan-chên
Tang-ling
Imp. tombs
Phan Shan
2700
Shi-mên
Ki
Pang-kun
San-ho
Thsing-ho
Yung-ting
Little Wu thai Shan
M. Pei-ting
9500
5000
M. Thsing-shui tsien
Po-hua Shan
6620
Chao-kia-fang
Tha-ho
Ta-lung-mên
Tchên-kia-thai
Kin-ling-tombs
Liang-hiang
Fang-shan
PEKIN
123
Tung-pu
Thung
Lu-kou-khiao
Tchang-sin-tien
Fêng-tai
Chang-kia-wan
Ma-kia-pu
Ma-kü-khiao
Hiu-tien
Pei Ho
Huang-chuang
Shang-thsung-chên
San Ho
Pao-khiu
Pao-ti
Hia-thsang-chên
Sin-an-chên
Hiang-ho
Ma-thou
Thsing-yün-tien
An-phing
Thsai-yü-chên
An-ting
Ho-si-wu
Lung-fang
Lin-thing-chên
Kien Ho
Ning-ho
Wu-thsing
Lo-fa
Thsai-thsun
Tung-an
Phan-kia-chuang
Huang-hua-tien
Yang-thsun
L. Thsi-li Hai
L. Thu-hoTien
Ho-kiu-chuang
TIENTSIN
Tsü-chu-lin
Pei-thang
Yang-kia-chuang
Ta-ku
Sin-tchêng
Shi-tu
Chang-fang
Liu-li
Cho
Sung-lin-tien
Êrh-shi-li-phu
Ku-an
Hun Ho
Pai-kou Ho
Yung-thsing
1640
Tsü-king-kuan
Si-ling
Imp. tombs
Yi
550
Lai-shui
Ting-ling
Sin-tcheng
Sin-khiao
Pei-ho-tien
Ku-tchêng-tien
Thien-thsun
Tchên-kia-phu
H
Khang-kia-ma-thou
Pa
L. San-kio Tien or Tung Tien
Shêng-fang
Su-khiao
Pai-kou-tien
Man-tchêng
An-su
Yung-tchêng
Hiung
Thsao-ho-tien
Sin-an-kien
Chao-pei-khou
L. Si Tien
Pao-ting
Wang-kia-khou
Tsing-hai
Liu-tiao-thai
Chi Ho
PAO-TING
Wan
Hing-yang
An
Mo-chou
Wen-an
Tsü-ya-chên
Hiang-tchêng-phu
Kiu sien Ho
Tsing-kiu-phu
Kao-yang
Jen-khiu
Ta-tcheng
Ma-tchuang
Han-kia-chuang
Mu-phêng-khou
Thsing-fêng-tien
Thao-khü-tien
Shi-mên-khiao
Liu-ho
Thsing
Khi-kiun-ying
Ku-tchêng
Po-ye
Li
Êrh-shi-li-phu
Mu chu Ho
Yang-thsun
Su-ning
Sin-tsi-chên
Hing-tsi
Li-thsun
Ta-sin-phu
Khi
HO-KIEN
Thsang
Ta-lun-chên
Kien Ho
Shi-phai Ho
Nan-kuan
An-phing
Tsung-kia-khiao
Hua-chên
Kiu-thsang-chou-tsi
Shen-tsê
Jao-yang
Hien
Sie-kia-wo
Mêng-thsun-phu
Yen-shan
Siao-li-phu
Sin-chuang-tien
Po-thou
Nan-phi
Tsin
Siao-ying
Shên
Fu-chuang
Kiao-ho
Wang-sha-phu
Wu-khiang
Kien-khiao-chên
Tung-kuang
Shu-lu
Thsing-hai-thou
Chao-khiao-phu
Kin-hien
Khing-yün
Fou-tchêng
Tchên-êrh-chuang
Wu-yi
Lien-wo-chên
Lao-huang Ho
Hai-fêng
Kia-chuang-phu
Man-ho-chên
Yang-fang
Old Yellow River
Hu-tho Ho
An-ling
Lê-ling
Liu-po-mi
Chi-khiu-thsun
Hêng-shui
King
Ningtsin
Yang-sin
Wu-khiao
Pao-thun-tien
Sie-kia-chuang
Pei-liu-chi
Sung-yüan
Sin-ho
Ki
Nan-liu-chi
Canal
Yü Ho
Tsü-ya Ho
Sha Ho

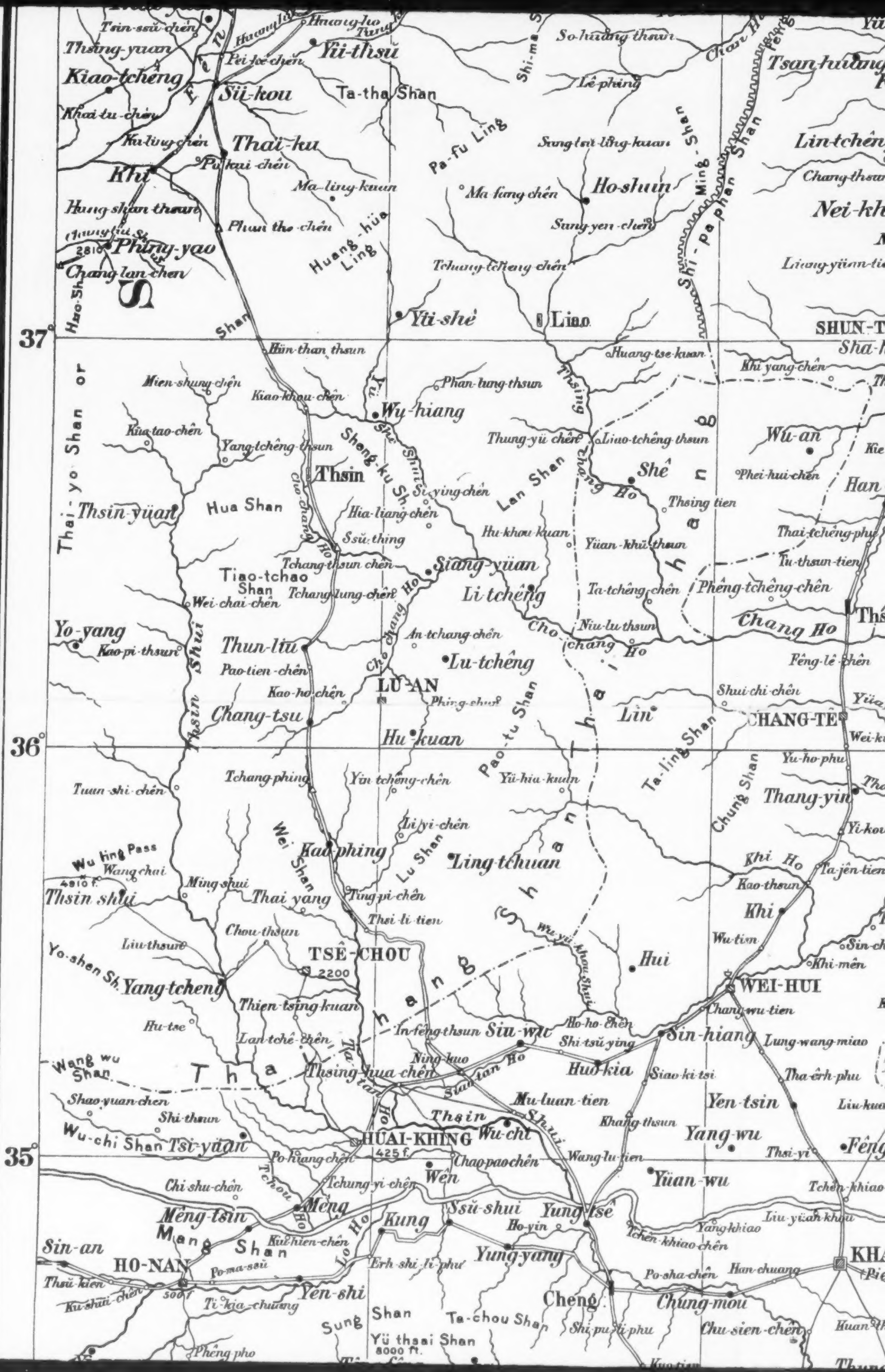

GULF OF PE-CHILI
(PO-HAI)
Liu Ho
Liu-ho-khou
Lung-shi-mên
Tu-shan
Kan-kou 1180
Pai-shi-tsui-mên
WILLOW
Khuan Ho
1060
Khuan-tchêng
Nan-thien-mên
Po-lo-thai
Hi-fêng-khou
Luan-yang
Thsing-shan-ying
Thsing-ho-khou
Lung-tsing-kuan
Sha-ho-khiao
San-thai-ying
Hsun-Hua
Sha Ho
Ku Ho
Phing-an-tcheng
Niang-ting Shan
Kuan-thou-Shan
Thsien-an
Yü thien
Sha-liu-ho
Pai-thsao-wa
Sin-tien-tsü
Feng-jun
Chên-tsü-chên
Sha-ho
Wang-fu-thai
YUNG-PHING
Fu-ning
Shuang-wang
Thai-phing
Ta-tien-tsü
Lo-kia-thun
Pai-tao-tsü-phu
Kien-tchang-ying
Thao-lin-ying
Ming-shui-thang mên
Shuang-shan-tsü
Thsing-lung Ho
Kie-ling-khou
Chu-tsao-ying
Shi-mên-chai
Thai-thou-ying
Shên-ko-phu
Lin-yü
Shan-hai-kuan
Fan-kia-tien
Ning-hai
Shi Ho
Yü-kuan
Tang-ho
Niu-thou-yai (Pei-ta-ho)
Rocky Pt
Yü Ho (Pei-ta Ho)
Liu-shui-ying
San Shan
Liang-shui Ho
Thsien-wei
Chien-wei
Chung-hou-so
Chung-thsien-so-tcheng
Chien-so
San-li-khiao
Sha-ho-so-tchêng
E-kia-fên
Thsing Shan
Luan
Ku-ye
Khai-phing
Tchang-li
Tchao Ho or Sha Ho
Phu-ho
Thuan-lin
L. Thsi li
Luan Ho
Ma-tchêng
Thao-li-chuang
Hua-pao-thun
Lê-thing
Kao-hê-chuang
Thang Shan
Han-tchêng
Feng-thai
Ki-tho
Sü-kê-chuang
Sü Ho
Thang-fang
Canal
Ling Ho
Chang-kiu-chuang
Lu-thai
Han-ku
Kien-ho-chuang
Hei-yen-tsü
Shên-thang
Tchang-cha-khou
Thing Ho
Ma-thou-ying
Ta-thsing-ho
Yang-lan-tho
Lao Ho
Sha-lei-thien Banks
Sha-lei thien
Yellow River
Huang Ho
Kiu-tchang-chên
Miao-shêng phu
Lao-ye-miao
Thie-men-kuan
Yen-wo
Ning-hai-Tien
Hai-fêng
Chan-hua
Sang-lo-thun
Li-tsin
Kao
Hou k
Ta hei shan T
Sang Tao
Mu-ki-tao Promy (CHIMATAU)
Lung-khou
Pi-kia

UM

LIAO-TUNG GULF
GULF OF PE-CHILI
(PO-HAI)
LAO-THIE-SHAN CHANNEL
MIAO-TAO-STRAIT
WILLOW PALIS
Ning Yüan
Lin-yü
Shan-hai-kuan
Fu-ning
YUNG-PHING
Tchang-li
Lê-thing
TÊNG-CHOW
Pi-kia Shan I.
Hu-lu-Tao Prom.y
Thai-tsu-shan
Lien-shan
Thao-hua Tao I.
Kü-hua Tao I.
(SADDLE I.)
Warren Pt
Sand Pt
Cruzier Shallows
Chung-hou-so
Thsien-wei
Chien-wei
Chien-so
Ning-hai
Shi Ho
Rocky Pt
Yü-Ho (Pei-ta Ho)
Niu-thou-yai (Pei-taho)
Liu-shui-ying
Phu-ho
L. Thsi li
Kan-kou 1180
Li-shu-kou-mên
Pai-shi-tsui-mên
Ming-shui-thang mên
Shuang-shan-tsü
Thsing-lung Ho or Ku-thsin
Tu-shan
Pai-tao-tsü-phu
Kien-tchang-ying
Thao-lin-ying
Kie-ling-khou
Chu-tsao-ying
Shi-mên-chai
Thai-thou-ying
Chung-thsien-so-tcheng
Shên-ko-phu
Fan-kia-tien
Wang-fu-thai
Shuang-wang
Yü-kuan
Tang-ho
Thuan-lin
Thao-li-chuang
Hua-pao-thun
Yang-lan-tho
Ma-thou-ying
Ta-thsing-ho
Luan Ho
Thing Ho
San Shan
Liang-shui Ho
Sha-ho-so-tchêng
San-li-khiao
Glacis Pt
Fort Head
Fu-chow Pt
FU CHOW BAY
Tchang-hing Tao I.
HU LU SHAN BAY
Po-lo Tao I.
Petermann Pt
Thu êrh Tao I.
Round P
SOCIETY BAY
Wedge Head
Thie-Shan or Iron I.
C. Collinson
Yang-thou-wo
Shuang-thou
PORT ARTH
OR LÜ-SHUN-KHOU
Lao thie Shan Prom.y
Miao-Tao Is
N. Huang tchêng Tao
S. Huang tchêng Tao
Ta-khin-Tao
Tho-ki Tao
Kao shan Tao
Hou ki Tao
Ta-chu Tao
Ta hei shan Tao
Tchang-shan Tao
Miao Tao
Sang Tao
Wu-chi-li-phu
Sloping Pt
Mu-ki-tao Prom.y
Yellow River
Huang Ho



GULF
Kao-khan
Si-mu-tchêng
Ying-kau
Port of Niuchuang
Hu-chuang-thien
Lung-thou chai
Thung-yuan-phu
Yo-chou-tchêng
Ma-kia-phu
Ta-lang-kou
Yao-kia-tien
Sha-tsü-kang
Kai-chou Pt
Kai phing (Kai chou)
Kai-chou Ho
San-li-chai
Sha-tsü-ho
Khê-pa-ling
Tower hill
Lêng-shui Ho
Hiung-yo Shan
Yao-ling
Hiung-yo-tchêng
Siu-Yen
Chê Shan
SADDLE BAY
The Bittern Shallows
Ta-yang Ho
Tho-kou-tsü
Maxwell Pt
Pi-li Ho
Ta-chuang Ho
Chêng-thai-tsü Ho
Siao-yang Ho
Shê-li-thsun
HELEN BAY
Liao-kia-khou
Lo-ku Shan
40°
Mo-kui Shan
Wu-tao Ho
Sha-khou
Glacis Pt
Yung-ning-tsien
Ssŭ-pung-kai
Ta-ku-shan
Head
Yang-ti-tien
Lung-mên-miao
Tung-kao-li
Si-kao-li
Cheng-thai-tsü
Liaotung
Shang-tsü
Ta-lu Tao
Fu
Sha-phao-tsü
Ta-chuang-ho
W BAY
Êrh-shi-li-phu
Fu-chou Ho
San-shi-li-phu
Ta-yen-tchang
Luan-ku-tchêng
Shui-mên-tsü
Wang-kia Tao
Chao-ti-tien
Thai-phing-ling
Kan-tsü-ki
Bourchier Group
(Shi-tchêng Tao)
Phau-thai-tsü
Yung-ti-tien
Kin-tchang
Ta-sha Ho
Wu-ho-shai
Po-lan-phu
Pi-tsü-wo
KOREAN
Round Pt
Shi-ho-phu
Hung-shui-phu
Elliot Group
Tchang-shan Tao?
Wu mang Tao
Pa tcna Tao
KIN-CHOW BAY
Kin-chow
Kuang-lu Tao
Ta hei Shan
Tha-lien Tao
Hai yang Tao
Blonde Is
Tchang-tsü Tao
or S. Blonde I.
Lao-shu-thun
39°
KERR BAY
GULF
TA LIEN WAN BAY
San-shan Tao
Siao-ping-thou
PORT ARTHUR
LU-SHUN-KHOU
ANNEL
38°
AIT

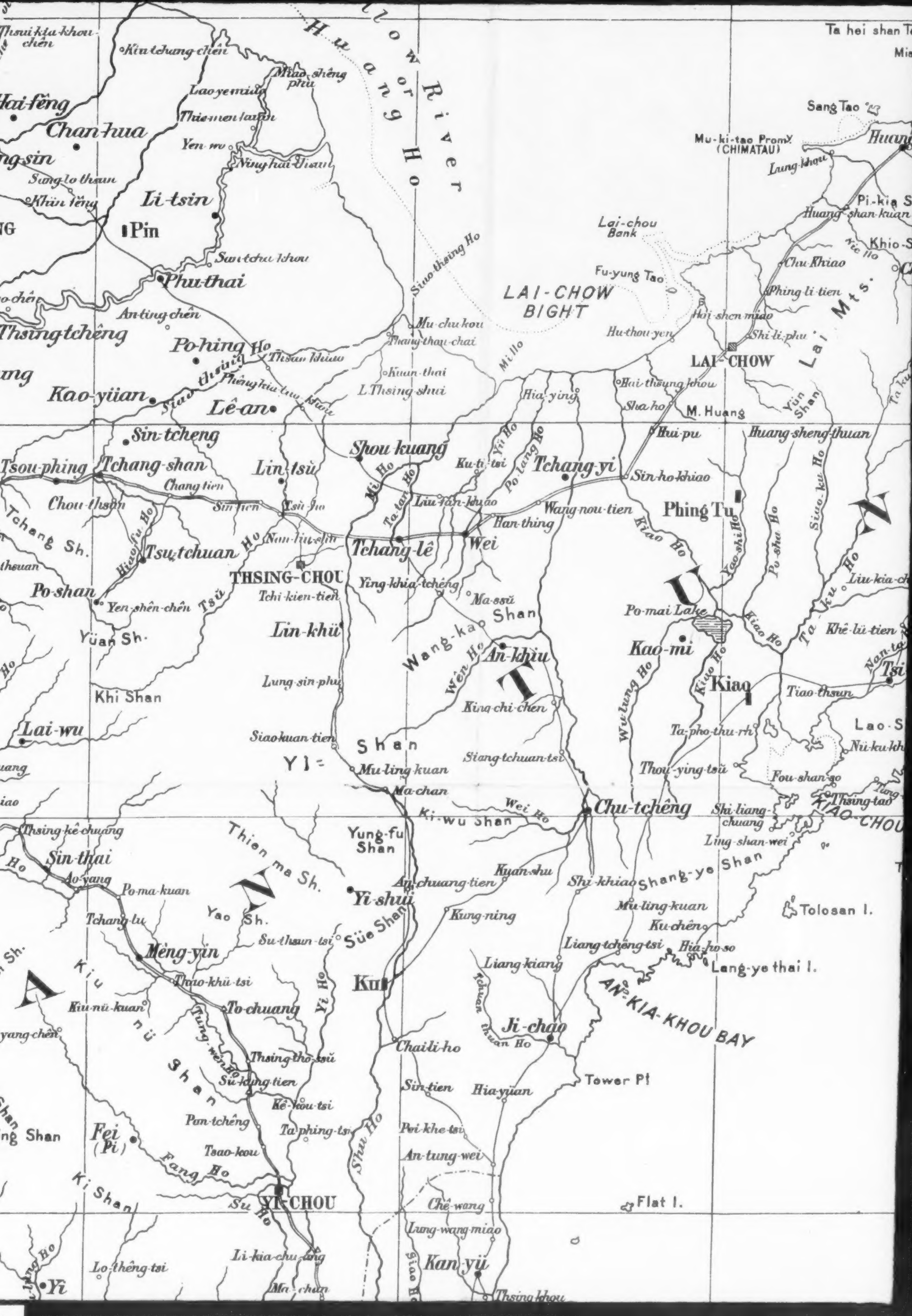


Tsin-ssŭ-chên
Thsing-yuan
Kiao-tchêng
Pei-tse-chên
Yü-thsŭ
Sü-kou
Ta-tha Shan
Khai-tu-chên
Ku-ling-chên
Thai-ku
Pu-kai-chên
Khi
Ma-ling-kuan
Pa-fu Ling
Hung-shan-thsun
Phun-the-chên
Huang-hüa Ling
Phing-yao
2810
Chang-lan-chen
Hao-Sh
Shan
Yü-shê
So-huang-thsun
Shi-ma S
Lê-phing
Sung-tsü-ling-kuan
Ma-fang-chên
Ho-shun
Sang-yen-chên
Tchung-tcheng-chên
Liao
Ming Shan
Shi-pa-phan Shan
Chan Ho
Tsan-huang
Lin-tchêng
Chang-thsun
Nei-kh
Liang-yüan-tie
SHUN-T
Sha-H
37°
Hün-than-thsun
Mien-shang-chên
Kiao-khou-chên
Phan-lung-thsun
Wu-hiang
Huang-tse-kuan
Khi-yang-chên
Thai-yo Shan or
Küa-tao-chên
Yang-tchêng-thsun
Sheng-ku Sh
Thsin
Thung-yü chên
Liao-tchêng-thsun
Wu-an
Kie
Thsing
Lan Shan
Shê
Phei-hui-chên
Han
Thsin-yüan
Hua Shan
Hia-liang-chên
Ssŭ-thing
Si-ying-chên
Hu-khou-kuan
Yüan-khü-thsun
Thsing tien
Thai-tchêng-phu
Tiao-tchao Shan
Tchang-thsun chên
Siang-yüan
Tu-thsun-tien
Wei-chai-chên
Tchang-lung-chên
Li-tchêng
Ta-tchêng-chên
Phêng-tchêng-chên
Yo-yang
Kao-pi-thsun
Thun-liu
An-tchang-chên
Cho Chang Ho
Niu-lu-thsun
Chang Ho
Pao-tien-chên
Lu-tchêng
Fêng-lê-chên
Kao-ho-chên
LU-AN
Phing-shui
Shui-chi-chên
Chang-tsu
Hu-kuan
Lin
CHANG-TÊ
Pao-tu Shan
Wei-k
36°
Thsin Shui
Tchang-phing
Yin-tchêng-chên
Yü-hia-kuan
Ta-ling Shan
Yu-ho-phu
Tuan-shi-chên
Chung Shan
Thang-yin
Li-yi-chên
Yi-kou
Wu ting Pass
Wang-chai
4810 f.
Kao-phing
Wei Shan
Lu Shan
Ling-tchuan
Khi Ho
Ta-jên-tien
Thsin shui
Ming-shui
Thai yang
Ting-pi-chên
Kao-thsun
Khi
Thsi-li-tien
Liu-thsun
Chou-thsun
Wu-tsun
Yo-shen Sh
TSÊ-CHOU
2200
Thai-hang Shan
Hui
Sin-ch
Khi-mên
Yang-tcheng
Wu-yü-kou Shui
WEI-HUI
Thien-tsing-kuan
Chang-wu-tien
Hu-tse
Ho-ho-chên
Lan-tchê-chên
In-fêng-thsun
Siu-wu
Shi-tsŭ-ying
Sin-hiang
Lung-wang-miao
Wang wu Shan
Ning-kuo
Thsing-hua-chên
Siau-tan Ho
Huo-kia
Siao-ki-tsi
Tha-êrh-phu
Shao-yuan-chen
Mu-luan-tien
Yen-tsin
Liu-kua
Shi-thsun
Thsin Shui
Khang-thsun
Wu-chi Shan
Tsi-yüan
HUAI-KHING
425 f.
Wu-chi
Yang-wu
35°
Po-hiang-chên
Chao-pao-chên
Wang-lu-tien
Wên
Thsi-yi
Fêng
Chi-shu-chên
Tchou Ho
Tchung-yi-chên
Yüan-wu
Tchên-khiao
Mêng
Mêng-tsin
Ssŭ-shui
Yung-tse
Liu-yüan-khou
Yang-khiao
Mang Shan
Kung
Ho-yin
Tchên-khiao-chên
Kui-hien-chên
Lo Ho
Sin-an
HO-NAN
Po-ma-ssŭ
Erh-shi-li-phu
Yung-yang
Han-chuang
KHA
Thsŭ-kien
Ku-shui-chên
500 f.
Yen-shi
Po-sha-chên
Ti-kia-chuang
Chêng
Chung-mou
Sung Shan
Ta-chou Shan
Shi-pu-li-phu
Chu-sien-chên
Huan-th
Yü thsai Shan
8000 ft.
Phêng-pho

Yüan-shi
Chao
Ta-shi-khiao
Heng-shui
King
An-ling
Ningtsin
Kao-yi
Sha-ho-tien
Ningtsin
Sin-kia-chuang
Wu-khiao
Pao-thun-tien
Po-hiang
Sin-ho
Ki
Tsao-khiang
Pei-liu-chi
Nan-liu-chi
Grand C
Ma kia Ho
L. Ningtsin Po
Han-thswo
San-lang-chen
Tê
Yang-thang
Lung-phing
Ku-tchêng
Ling
Nan-kung
Thien-thsun-phu
Shan
Nei-khiu
Thangshan
L. Ta-lu-Tsê
Thêng-kia-khou
Hwang-ho-yai
Khii-lu
Lin-yi
Nan-wang-tien
Kü-lu
Tung-kia-miao
Kiama-ying
Wu-tchêng
Phing-yüan
En
Jên
Sin-tien-chên
Hung-liang-tsi
Kuang-tsung
Thsing-ho
Ta-khou
Li-ki-chai
SHUN-TÊ
Nan-ho
Yu-fang-chên
Yao-chan
Liu-pei-chan
Sha-ho
Phing-hiang
Wei
Hia-tsin
Lien-thsun
Yü-tchêng
Ki-tsê
Ta-chai-phu
Lin-Thsing
Kao-Thang
Tchang-kia-chuang
Tha-lien-tien
Ming
Khü-mo-tsi
Lung-thang-chên
Tai-kia-wan
Sin-tien
Yen-tchêng
Lin-ming-kuan
Khü-chou
Liu-lin
Thing-shui-phu
Kie-ho-tien
KUANG-PHING
Wei-kia-wan
Thsing-phing
Thsi-ho
Lo-khou
Khiu
Han-tang
Fei-hiang
Sin-chai-chên
Kuan-thao
Jên-phing
Tu-kia-miao
TSI-NA
Tchao-mi-tien
Thang-yi
Po-phing
Tchang-thsing
Ku-shan
Ho-sha-phu
Kuang-phing
Wang-tien-phu
Kuan-chuang
Chang-hia
Tung-han-phu
Kuan
Tchêng-an
Huang-kin-ti-phu
TUNG-TCHANG
Ke ma Shan
Wei-hien
Ma-khiao
Thung-tchêng
Thsü
Chêng-kia-chuang
Sö-tien-thsun
Huang Ho
Sha-chên
Chou-kia-tien
Phing-yin
Tchang-tchêng
Lin-chang
TA-MING
Pei-chang-tsi
Tien-thai
Shên
Yü Shan
Fei-tchêng
Hui-lung-chên
Wei Ho
Ku-thsun
Yang-ku
Tung-e
Ê-tchêng
Nan-lê
tchêng
Chang-thsiu-chên
Yüan Ho
Wei-kia-ying
Nan-thsing-tien
Yang-ku-tien
Pu-li-miao
Tai-kia-miao
Kao-ti-chên
Hou-êrh-chuang
Kuan-tchêng
Shou-chang
Ta-wên
Wen Ho
Thang Ho
Nei-huang
Thsing-fêng
Fan
An-shan
Tung-Phing
Kuan-ti-miao
Tchi-ho-phu
Yi-kou
Tsing-tien-phu
Yi-tha-miao
Lung-chü-tien
Wên-shang
Ning-yang
Wu-lung-chên
Pu
Yüan-kia-khou
Khai-ho
Sin-tien
Tomb of Confucius
Ta-jên-tien
Yellow River
Yün-tchêng
Nan-wang
Sin-kia
Sün
Khai
Khang-chuang
Kao-khiao-phu
Khü-f
Tao-khou
Tsü-an-tsi
L. Tu-shan
YEN-CHOU
Sin-chên
Hua
Kia-siang
An-kü-tien
Khi-mên
Wang-wu-chai
Tsi-Ning
Söü-ma-tsi
Kü-ye
Tsou
Kao-phing-tsi
S
Chao-wang Ho
Nan wu Shan
Sin-cha
Erh-kia-phu
Tung-ming
THSAU-CHOU
Man-kia-ying
Niu-thou Ho
Ssu Ho
Kie-ho
Tchang-yüan
Wan-fu Ho
Lu-khiao
Chu-lin-tsi
Kin-ti-tsi
Nan-yang-cha
Lake
Sü-kia
Liu-kuang-tsi
Ma-kia-tsi
Ting-thao
Chao-yang
Tu-shêng-ying
Pai-hua Ho
Kin-hiang
Sin-khou Ho
Yen-kau
Fêng-khiu
Tchêng-wu
Yü-thai
Kiu-yün Ho
Shên-phêng
Shan
Tchên-khiao-chên
Lung-mên-khou
Fou-kan-tsi
Thsao
Liu-kia-tsi
Lan-yi
Yi-fêng
Shun-ti Ho
KHAI-FÊNG
(Pien-tchêng)
of the
Chao-kia-chuang
Fêng
Phei
Old course of the Yellow River (before
Tchên-liu
Khao-tchêng
Ho-yai
Hua-shan-tsi
Huan-thou
Han-kang
Pei-sha Ho
Yü-tchêng
Ku-kia-khou

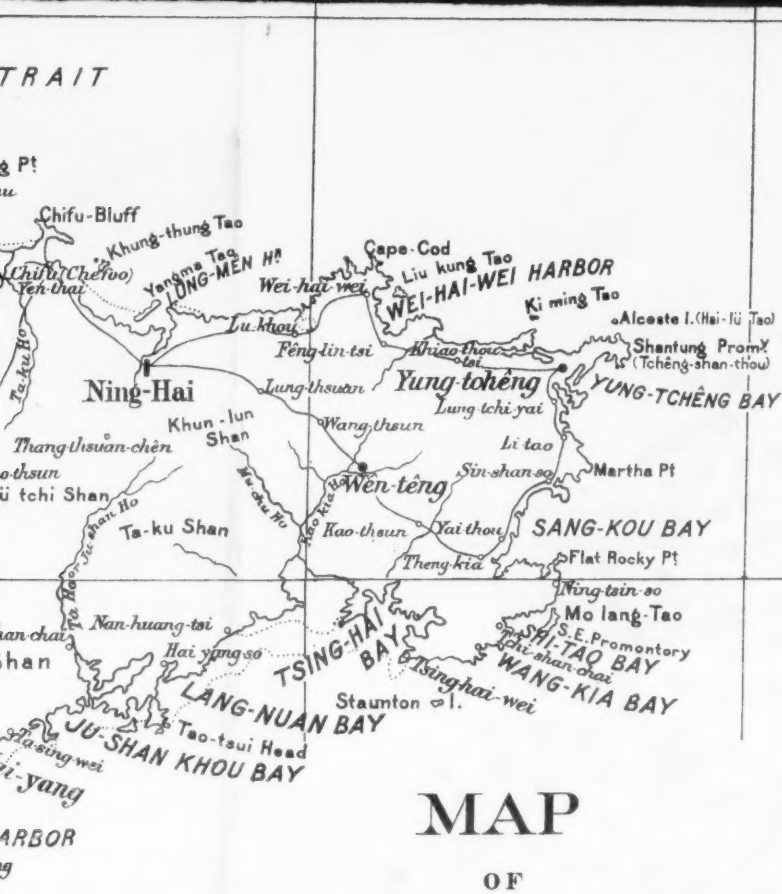
M


Shên
Wu-khiang
Shu-lu
Kiao-ho
Tung-kuang
Fou-tchêng
Wu-yi
Grand Canal
Lao Ho
Hu tho Ho
Hêng-shui
King
Wu-khiao
Lê-ling
Ningtsin
Khing-yün
Hai-fêng
Yang-sin
Sin-ho
Ki
Tsao-khiang
Tê
Kü-tchêng
Tê-phing
WU-TING
Ma kia Ho
Sha Ho
Ling
Shang-ho
Nan-kung
Kü-lu
Lin-yi
Wu-tchêng
En
Phing-yüan
Thu-hie Ho
Thsi-tung
Kuang-tsung
Thsing-ho
Hia-tsin
Yü-tchêng
Tsi-yang
Lin-Thsing
Kao-Thang
Chang-khiu
Thsi-ho
TSI-NAN
Khiu
Kuan-thao
Thsing-phing
Jên-phing
Po-phing
Tchang-thsing
Thang-yi
Kuan
TUNG-TCHANG
Huang Ho
Ke ma Shan
Chang-hia
Li Shan
Thai Sh.
5060 f.
THAI AN
710 f.
Phing-yin
Fei-tchêng
Yü Shan
Tung-e
Shên
Yang-ku
Nan-lê
Wen Shui
Tsu lai Sh.
Shou-chang
Fan
Tung-Phing
Wen Ho
Siao wên Ho
Shi mên Shan
Thsing-fêng
Wên-shang
Ning-yang
Tomb of Confucius
Ssü Ho
Ssü-shui
Khü-fou
Phoi-wei Sh.
Pu
Yellow River
Yün-tchêng
YEN-CHOU
Kia-siang
Tsi-Ning
Tsou
Yi Shan
Thsüan ku Shan
Kü-ye
S
H
A
Nan wu Shan
THSAU-CHOU
Wan fu Ho
Chung-ting Shan
Thêng
Ting-thao
Kin-hiang
Yü-thai
Tchêng wu
Shan
Hia-chên
Lin-tchêng
Phan lung Ho
Thsao
Shun-ti Ho
Sha-kou-ying



Yellow River
Huang Ho
LAI-CHOW BIGHT
LAI-CHOW
Lai Mts.
Lai-chou Bank
Fu-yung Tao
Mu-ki-tao Promy.
(CHIMATAU)
Sang Tao
Lung-khou
Huang-shan-kuan
Chu-khiao
Phing-li-tien
Hai-shen-miao
Shi-li-phu
Hu-thou-yen
Hai-thsung-khou
Sha-ho
M. Huang
Hui-pu
Huang-sheng-thuan
Sin-ho-khiao
Phing Tu
Wang-nou-tien
Tchang-yi
Hia-ying
Mi Ho
Mu-chu-kou
Kuan-thai
L. Thsing-shui
Shou-kuang
Ku-ti-tsi
Liu-tan-khiao
Han-thing
Wei
Tchang-lê
Ying-khia-tchêng
Ma-ssŭ
Wang-ka Shan
An-khiu
Wên Ho
Kiao Ho
Po-mai Lake
Kao-mi
Kiao
Wu-lung Ho
Ta-pho-thu-rh
Thou-ying-tsŭ
Fou-shan-so
Thsing-tao
KIAO-CHOU
Tiao-thsun
Lao-S
Nü-ku-kh
Liu-kia-ch
Khê-lü-tien
Ta-ku Ho
Po-sha Ho
Yao-shi Ho
Siao-ku Ho
Kin-chi-chen
Siang-tchuan-tsi
Chu-tchêng
Shi-liang-chuang
Ling-shan-wei
Shang-ye Shan
Shi-khiao
Mu-ling-kuan
Ku-chên
Liang-tchêng-tsi
Hia-ho-so
Lang-ye thai I.
Tolosan I.
AN-KIA-KHOU BAY
Liang-kiang
Ji-chao
Tower Pt
Hia-yüan
Flat I.
Kuan-shu
Kung-ning
An-chuang-tien
Yi-shui
Süe Shan
Ku
Yung-fu Shan
Ki-wu Shan
Wei Ho
Ma-chan
Mu-ling-kuan
YI Shan
Siao-kuan-tien
Lung-sin-phu
Lin-khü
THSING-CHOU
Tchi-kien-tien
Lin-tsü
Tsü Ho
Sin-tien
Nan-liu-shi
Lê-an
Kao-yüan
Po-hing
Sin-tcheng
Tchang-shan
Tsou-phing
Chang-tien
Chou-thsun
Tchang Sh.
Tsu-tchuan
Hiao-fu Ho
Po-shan
Yen-shên-chên
Yüan Sh.
Khi Shan
Lai-wu
Thsing-kê-chuang
Sin-thai
Ao-yang
Po-ma-kuan
Tchang-lu
Mêng-yin
Thien ma Sh.
Yao Sh.
Su-thsun-tsi
Thao-khü-tsi
To-chuang
Kiu-nü-kuan
Kiu nü Shan
Yi Ho
Chaili-ho
Thsing-tho-tsü
Su-kung-tien
Kê-kou-tsi
Pan-tchêng
Ta-phing-tsi
Fei (Pi)
Tsao-kou
Fang Ho
Ki Shan
YI-CHOU
Su Ho
Shu Ho
Sin-tien
Pei-khe-tsi
An-tung-wei
Chê-wang
Lung-wang-miao
Kan-yü
Thsing-khou
Li-kia-chuang
Lo-thêng-tsi
Ma-chan
Yi
Hai-fêng
Chan-hua
Li-tsin
Pin
Phu-thai
An-ting-chên
Thsingtchêng
Kin-tchang-chên
Miao-shêng-phu
Lao-ye-miao
Yen-wu
Ning-hai-tsun
Sun-tchu-khou
Sung-lo-thsun
Khin-têng
Thsui-kia-khou-chên
Ta hei shan
Huang
Pi-kia
Khio-s
T
U
N
A

Yellow River or Huang Ho
MIAO-TAO-STRAIT
Ta hei shan Tao
Tchang-shan Tao
Miao Tao
Sang Tao
TENG-CHOW
Wu-shi-li-phu
Kü Shan
Sloping Pt
Thsi-shi-li-phu
Mu-ki-tao Promy. (CHIMATAU)
Huang
Lung-khou
Ya-kia-khüan
Kung-kia-chuang
Chifu
Fu-shan
Pi-kia Shan
Huang-shan-kuan
Ai Shan
Ku-hien
Lai-chou Bank
Khio-Shan
Chao-yuan
Chu-Khiao
Fu-yung Tao
LAI-CHOW BIGHT
Phing-li-tien
Lai Mts.
Fu Shan
Thsi-hia
Hai-shen-miao
Shi-li-phu
Mu-chu-kou
Hu-thou-yen
Thang-thou-chai
LAI-CHOW
Thao-thsun
Kü tchi Shan
Kuan-thai
L.Thsing-shui
Hia-ying
Hai-thsung-khou
San-thsing-tien
Sha-ho
M. Huang
Yün Shan
Shou-kuang
Hui-pu
Huang-sheng-thuan
Lai-yang
Ku-ti-tsi
Tchang-yi
Ju-shan-chai
Mi Ho
Sin-ho-khiao
Kiao-wu Shan
Liu-tan-khiao
Wang-nou-tien
Phing Tu
Han-thing
Kiao Ho
Ta-shan-so
Tchang-lê
Wei
Kin-kia
Hai-yang
CHOU
Liu-kia-chuang
Ying-khia-tchêng
Ma-ssü
Po-mai Lake
TING-TSÜ HARBOR
Wang-ka Shan
Tchan Sh.
Khê-lü-tien
Huang-lung-chuang
An-khiu
Kao-mi
Tsi-mo
C. Adkins
Kiao
Tiao-thsun
Ao-shan-wei
King-chi-chen
Lao-Shan
Ta-pho-thu-rh
Shan
Siang-tchuan-tsi
Nü-ku-khou
Mu-ling-kuan
Thou-ying-tsü
C.Ya-tau
Ma-chan
Fou-shan-so
LAO-SHAN H.
Thsing-tao
Wei Ho
Chu-tchêng
Shi-liang-chuang
Ki-wu Shan
KIAO-CHOU BAY
Yung-fu Shan
Ling-shan-wei
Teha-lien I.
Kuan-shu
An-chuang-tien
Shi-khiao
Shang-ye Shan
Yi-shui
Kung-ning
Tolosan I.
Süe Shan
Mu-ling-kuan
Ku-chên
Liang-tchêng-tsi
Hia-ho-so
Lang-ye thai I.
Liang-kiang
Kü
Yi Ho
AN-KIA-KHOU BAY
Ji-chao
Chaili-ho
Tower Pt
Sin-tien
Hia-yüan
Pei-khe-tsi
An-tung-wei
Shu Ho
CHOU
Chê-wang
Flat I.
Lung-wang-miao
Kan-yü
Thsing-khou



MAP

OF

NORTH EASTERN CHINA

PREPARED IN THE

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,
MILITARY INFORMATION DIVISION,

WASHINGTON, U.S.A.

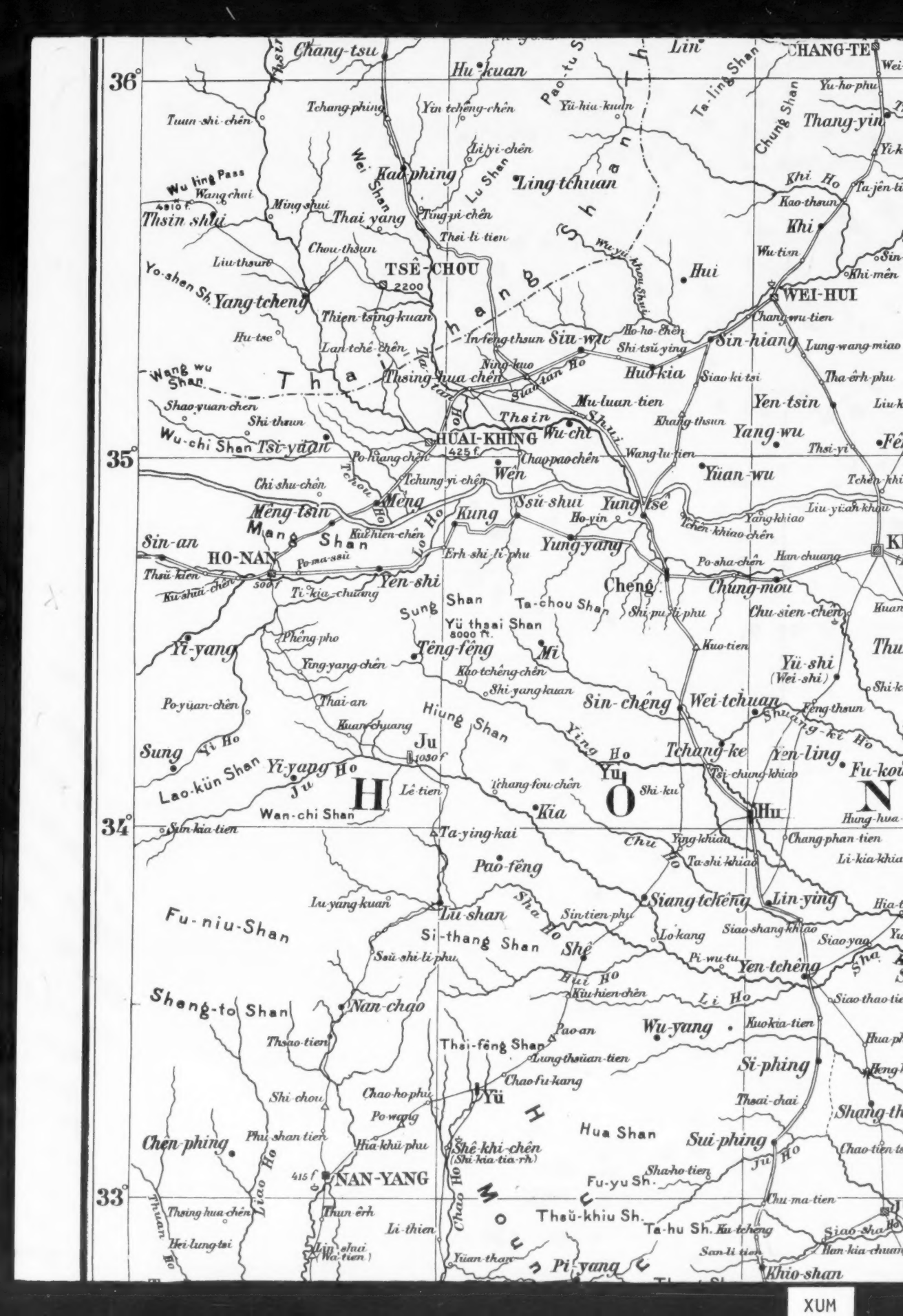
1900.

SCALE

10 0 10 20 30 40 50 MILES.

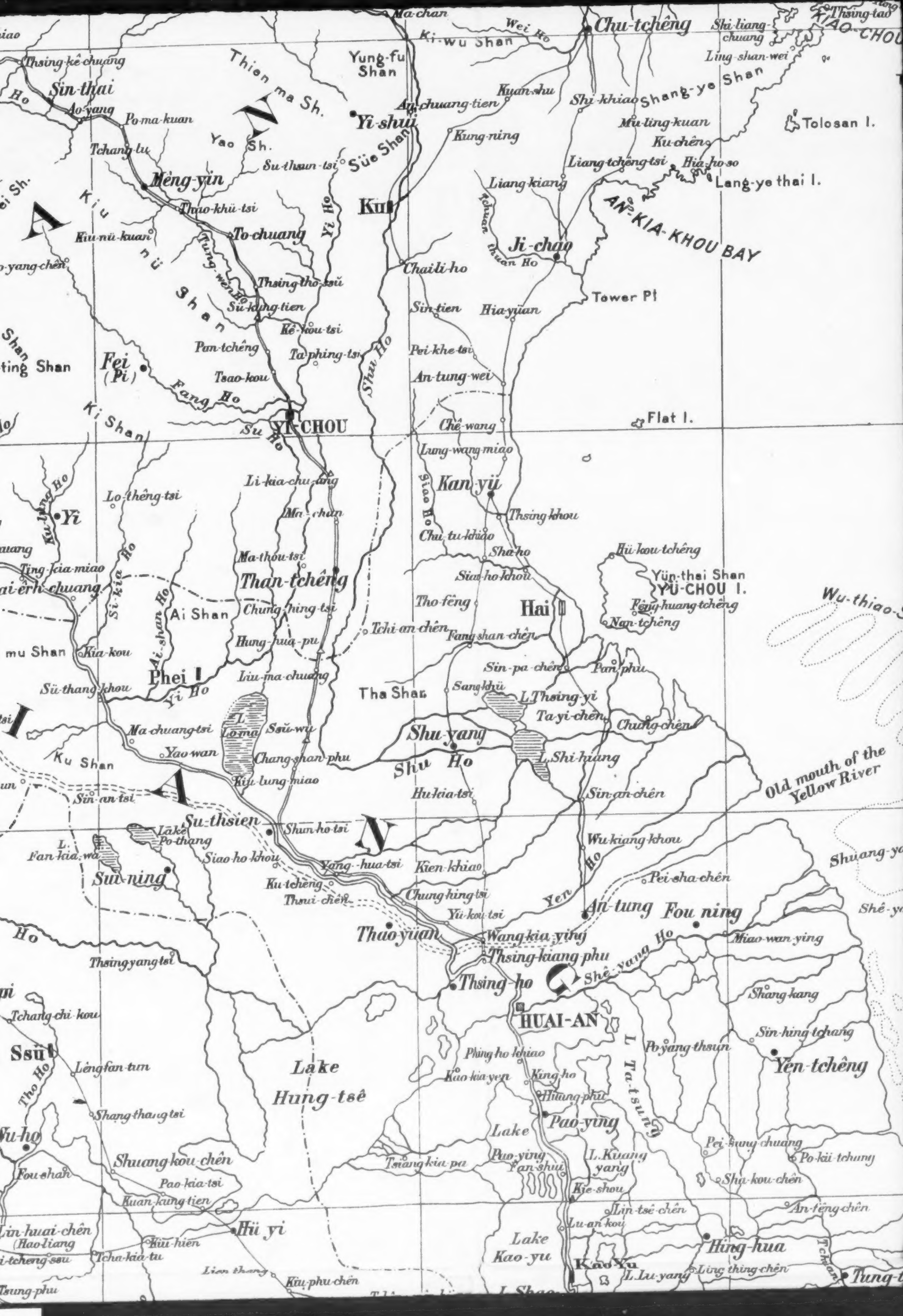
CONVENTIONAL SIGNS.

- Boundary of Provinces.
- Boundary of Mongol clans or banners.
- Fu – Capital of Province.
- Fu – Prefectural City, or City of 1st order.
- Chi-li-Chou or simply Chou – Independent Department City, or City of 2nd order.
- Chou – Department City, or City of 2nd order.
- Hien – District City, or City of
- Yi – Post - town.
- Small Town, Village.
- Imperial Tombs.
- Mountain Pass.
- Main Roads.
- Smaller Roads.
- Rail Roads.
- Rail Roads Projected.
- Great Wall.
- Place where a river becomes navigable for larger boats.
- Place where a river becomes


36°
35°
34°
33°
Chang-tsu
Hu-kuan
Pao-tu Shan
Lin
CHANG-TE
Ta-ling Shan
Chung Shan
Thang-yin
Yu-ho-phu
Tchang-phing
Yin-tcheng-chen
Yü-hia-kuan
Tuun-shi-chen
Li-yi-chen
Wei Shan
Kao-phing
Lu Shan
Ling-tchuan
Wu ling Pass
4910 f.
Wang-chai
Ming-shui
Thai yang
Thsin shui
Tung-yi-chen
Thai-li-tien
Khi Ho
Ta-jên-ti
Kao-thsun
Khi
Wu-tien
Chou-thsun
Liu-thsun
TSÉ-CHOU
2200
Yo-shen Sh.
Yang-tcheng
Hui
WEI-HUI
Khi-mên
Thien-tsing-kuan
Chang-wu-tien
Hu-tse
Lan-tché-chen
In-feng-thsun
Siu-wu
Ho-ho-chen
Shi-tsü-ying
Sin-hiang
Lung-wang-miao
Wang wu Shan
Thai Shan
Tsing-hua-chen
Ning-kuo
Siao-kian Ho
Huo-kia
Siao-ki-tsi
Tha-êrh-phu
Shao-yuan-chen
Mu-luan-tien
Yen-tsin
Shi-thsun
Thsin Shui
Wu-chi
Khang-thsun
Yang-wu
Wu-chi Shan
Tsi-yuan
HUAI-KHING
425 f.
Po-hiang-chen
Chao-pao-chen
Wang-lu-tien
Thsi-yi
Wên
Yuan-wu
Chi-shu-chen
Tchou Ho
Tchung-yi-chen
Meng
Ssü-shui
Yung-tsê
Meng-tsin
Kung
Ho-yin
Yang-khiao
Liu-yuan-khou
Mang Shan
Kui-hien-chen
Lo Ho
Yung-yang
Tchen-khiao-chen
Sin-an
HO-NAN
Erh-shi-li-phu
Po-sha-chên
Han-chuang
Po-ma-ssü
Thsü-kien
500 f.
Yen-shi
Cheng
Chung-mou
Ku-shui-chen
Ti-kia-chuang
Sung Shan
Ta-chou Shan
Shi-pu-li-phu
Chu-sien-chen
Yü thsai Shan
8000 ft.
Phêng-pho
Yi-yang
Têng-fêng
Mi
Kuo-tien
Yü-shi
(Wei-shi)
Ying-yang-chen
Kao-tchêng-chen
Shi-yang-kuan
Po-yuan-chen
Thai-an
Sin-chêng
Wei-tchuan
Feng-thsun
Hiung Shan
Kuan-chuang
Shuang-ki Ho
Sung Yi Ho
Ju
1030 f.
Ying Ho
Tchang-ke
Yen-ling
Fu-kou
Lao-kün Shan
Yi-yang Ho
Ju Ho
H
Lê-tien
Tchang-fou-chen
O
Shi-ku
N
Kia
Hu
Wan-chi Shan
Hung-hua
Sin-kia-tien
Ta-ying-kai
Chu Ho
Yang-khiao
Chang-phan-tien
Ta-shi-khiao
Li-kia-khia
Pao-fêng
Lu-yang-kuan
Siang-tchêng
Lin-ying
Sha Ho
Lu-shan
Sin-tien-phu
Fu-niu-Shan
Si-thang Shan
Lo-kang
Siao-shang-khiao
Siao-yao
Shê
Pi-wu-tu
Yen-tchêng
Sha
Ssü-shi-li-phu
Hui Ho
Ku-hien-chen
Li Ho
Shang-to Shan
Nan-chao
Siao-thao-tien
Wu-yang
Kuo-kia-tien
Thsao-tien
Pao-an
Thai-fêng Shan
Lung-thsüan-tien
Si-phing
Chao-fu-kang
Shi-chou
Chao-ho-phu
Yü
Thsai-chai
Po-wang
H
Hua Shan
Sui-phing
Chao-tien-ts
Chên-phing
Phi-shan-tien
Hia-khü-phu
Shê-khi-chên
(Shi-kia-tia-rh)
Ju Ho
Sha-ho-tien
415 f.
NAN-YANG
Fu-yu Sh.
Chao Ho
Liao Ho
Thsing-hua-chen
Thun-êrh
Thsü-khiu Sh.
Chu-ma-tien
Ta-hu Sh.
Ku-tcheng
Li-thien
Hei-lung-tsi
Yüan-than
San-li-tien
Khio-shan
Pi-yang

Wei-kia-ying
Thang Ho
Yi-kou
Ta-jên-tien
Kao-ti-chên
Nei-huang
Wu-lung-chên
Sün
Tao-khou
Sin-chên
Hua
Khi-mên
Wang-wu-chai
Kao-phing-tsi
Tchang-yüan
Liu-kuang-tsi
Fêng-khiu
Tchên-khiao-chên
Nan-thsing-tien
Hou-êrh-chuang
Thsing-fêng
Kuan-ti-miao
Tsing-tien-phu
Yi-tha-miao
Khai
Tsü-an-tsi
Ssü-ma-tsi
Tung-ming
Chu-lin-tsi
Tu-shêng-ying
Lung-mên-khou
Lan-yi
Yi-fêng
tchêng
Kuan-tchêng
Fan
Lung-chü-tien
Pu
Chang-thsiu-chên
Shou-chang
Yellow River
Chao-wang Ho
THSAU-CHOU
Kin-ti-tsi
Ma-kia-tsi
Ting-thao
Pai-hua Ho
Yen-ku
Tchêng-wu
Shên-phêng
Thsao
Fou-kan-tsi
Shan
Pu-li-miao
Yang-ku-tien
Tai-kia-miao
An-shan
Tung-Phing
Wen Ho
Tchi-ho-phu
Wên-shang
Ning-yang
Tomb of Confucius
Yüan-kia-khou
Khai-ho
Sin-tien
Sin-kia
Yün-tchêng
Nan-wang
Khang-chuang
Khao-khiao-phu
L. Tu-shan
YEN-CHOU
An-kü-tien
Tsi-Ning
Kia-siang
Kü-ye
S
Tsou
Nan wu Shan
Man-kia-ying
Sin-cha
Erh-kia-phu
Kie-ho
Wan-fu Ho
Lu-khiao
Nan-yang-cha
Lake
Chao-yang
Kin-hiang
Sin-khou Ho
Yü-thai
Kiu-yün Ho
Liu-kia-tsi
Shun-ti Ho
Chao-kia-chuang
Fêng
Phei
KHAI-FÊNG
(Pien-tchêng)
Tchên-liu
Han-kang
Kuan-thou
Thung-hü
Khi
Siao-ho-phu
Shi-kia-khiao
Khao-tchêng
Old course of the Yellow River (before 18
Ho-yai
Pei-sha Ho
Yü-tchêng
Hua-shan-tsi
Ku-kia-khou
Tang-shan
Nan-chên-tsi
Ning-ling
Shui-tchi-phu
KUI-TÊ
Yü-siang-phu
Sui
Yang-yi-phu
Thsai-kia-tao-khou
Ku-shu
Yen-kia-tsi
Shi-liu-kai
Hia-yi
Thsui-khiao
Kia-lu Ho
Thsing-kang Ho
Hui-tsi Ho
An-kia Ho
Nan-sha Ho
Tsi-yang
N
Hui-thing
Pa-kou Ho
Lung-kou Ho
Fu-kou
N
A
Thai-khang
Ho or Kê Ho
Chê-tchêng
Wu-siang
Tsan-yang
Thsing-li-tsi
Wa-tsü-kh
Sü-khi-khou
Yung-tchêng
Hung-hua-tsi
Ma-tchang-tsi
Lu-kia-tsi
Tsün-hien-tchêng
Thie-fo-ssü
Po-shan-yi
Li-kia-khiao
Miao-kia-tsi
Lao-chung-tsi
Wu-ma-kou
Si-hua
Chao-thsun
Lu-yi
Po
Ssü-phu
Hia-thing
Liu-lin-tsi
Tchê-kia-pu-khou
Chi Ho
Lang Shan
TCHÊN-CHOU
Yung-ning-tsi
Chou-kia-khou
Tan-tchêng
Shi-tsü-ho
Sha-thu-tsi
Shui-tchi
Sha Ho
Shang-shui
Fêng-thang-tsi
Chao-khi-thun
Nan-phing-tsi
Siao-thao-tien
Sin-chan-tsi
Lu-thai
Shuang-kou-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Hua-phi-tsi
Fei-ho-khou
Pan-khiao-tsi
Heng-khiao
Huai-tien-tsi
Ni-khiu-tsi
L. Thsing-yu
Si-yang-tsi
Kê Ho
Tung-fei Ho
Hiang-tchêng
Chi-tien-tsi
Kie-shou-tsi
Mêng-tchêng
Shang-thsai
Shên-khiu
Wang-shi-tsi
Shuang-kien-tsi
Hung Ho
Fen Ho or Kê Ho
Kiu-hien
Thai-ho
Tung-kia-tsi
Kie-kou-tsi
Chao-tien-tsi
Shê-khiao-tsi
Thung-yang-chên
Sha Ho
Kie-phai
Siao-khiao-kou
Chai-thou
Si-fei Ho
Shên-khiu-tsi
Sie-kia-tsi
Ho-kia-liu
JU-NING
Thsü-ho-pu
Ta-hing-tsi
Fang-kia-tsi
YING-CHOU
Huai-yü
Yang-pu-chên
Wa-tien-tsi
Tchang-kuan-tien
Phing-yü-tcheng
Kao-phan
Kie-kou-tsi
Liu-tung-khou
Shang-yao-che

Nan-thsing-tien
tchêng
Chang-thsiu-chên
Pa-li-miao
Yang-ku-tien
Kuan-tchêng
Tai-kia-miao
Hou-êrh-chuang
Fan
Shou-chang
Thsing-fêng
An-shan
Tung-Phing
Wen Ho
Tsu lai Sh.
Kuan-khiao
Yang-lui-tien
Ta-wên-khou
Siao wên Ho
Shi mên Shan
Tchi-ho-phu
Wên-shang
Ning-yang
Lung-chü-tien
Yi-tha-miao
Pu
Yellow River
Yüan-kia-khou
Khai-ho
Sin-tien
Sin-kia
Tomb of Confucius
Ssŭ Ho
Ssŭ-shui
Phei-wei Sh.
Yün-tchêng
Nan-wang
Khang-chuang
Khiü-fou
Khai
L. Tu-shan
YEN-CHOU
Kia-siang
An-kü-tien
Tsi-Ning
Mao-yang-chên
Thsüan ku Shan
Tsou
H
Yi Shan
Chao-wang Ho
Kü-ye
S
Niu-thou Ho
Sin-cha
Ssŭ Ho
Erh-kia-phu
Nan wu Shan
THSAU-CHOU
Man-kia-ying
Kie-ho
Chung-ting Shan
Wan-fu Ho
Lu-khiao
Kin-ti-tsi
Nan-yang-cha
Lake
Thêng
Ma-kia-tsi
Ting-thao
Chao-yang
Sü-kia-ying
Pai hua Ho
Kin-hiang
Sin-khou Ho
Yen-ku
Yü-thai
Kiu-yün Ho
Kuan-khiao
Phan lung Ho
Tchêng-wu
Shan
Shên-phêng
Fou-kan-tsi
Hia-chên
Lin-tchêng
Thsao
Liu-kia-tsi
Shun-ti Ho
Grand Canal
Sha-kou-ying
Old course of the Yellow River (before 1852)
Chao-kia-chuang
Fêng
Phei
Han-chuang
Khao-tchêng
Ho-yai
Hua-shan-tsi
Wei-shan
Ting-kia
Thai-êrh-chu
Yü-tchêng
Ku-kia-khou
Li-kuo
Pei-sha Ho
K
Tang-shan
Wang mu Shan
Ning-ling
Shui-tchi-phu
KUI-TÊ
Liu-thsien-phu
Yü-siang-phu
Thsai-kia-tao-khou
Nan-chên-tsi
Chên-kia-tsi
Thien Sh.
Sui
Yang-yi-phu
Ku-shu
Yen-kia-tsi
Shi-liu-kai
Hia-yi
Lung-kou Ho
Thai Sh.
Wei-kia-tsi
I
An-kia Ho
Tsi-yang
N
Siao
SÜ-CHOU
Hui-tsi Ho
A
Pa-kou Ho
Hui-thing
Wu-siang
Tsan-yang
Thsing-li-tsi
Wa-tsŭ-khou
Fang-thsun
Chê-tchêng
Yung-tchêng
Sü-khi-khou
Thai-thsun Ho
Thao-shan
Ke Ho
Ma-tchang-tsi
Lu-kia-tsi
Tsan-hien-tchêng
Kia-kou
Khui Ho
Lao-chung-tsi
Thie-fo-ssŭ
Po-shan-yi
Fu-li-tsi
Fan-kia
Wu-ma-kou
Ssŭ-phu
Chao-thsun
Lu-yi
Po
Tchê kia pu khou
Chi Ho
Lang Shan
Su
Sui Ho
TCHÊN-CHOU
San-shi-li-phu
Shi-tsŭ-ho
Tan-tchêng
Sha-thu-tsi
Shui-tchi-phu
Ta-tien
Fêng-thang-tsi
Nan-phing-tsi
Ling-pi
Chao-khi-thun
Lu-thai
Shuang-kou-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Jên-khiao
Tchang-chi
Fei-ho-khou
Kui Ho
Huai-tien-tsi
Pan-khiao-tsi
Ssŭ
Ni-khiu-tsi
Si-yang-tsi
L. Thsing-yu
Kê Ho
Ku-chên
Chi-tien-tsi
Mêng-tchêng
Tung fei Ho
Tho Ho
Hie Ho
Kie-shou-tsi
Wang-shi-tsi
Lien-tchêng
Shên-khiu
Shuang-kien-tsi
Fên Ho
Sha Ho
Kiu-hien
Tung-kia-tsi
Kie-kou-tsi
Wu-ho
Thai-ho
Wang-chuang
Siao-khiao-kou
Chai-thou
Fou-shan
Thung-yang-chên
Kie-phai
Si fei Ho
San-phu
Shên-khiu-tsi
Sie-kia-tsi
Ho-kia-liu
Ke Ho
Thsŭ-ho-pu
Ta-hing-tsi
Tchang-huai-wei
Lin-huai-chên (Hao-liang)
King-shan-khou
Huai-yüen
Wa-tien-tsi
Tchang-kuan-tien
YING-CHOU
FÊNG-YANG
Mei-tcheng-ssu
Kie-kou-tsi
Liu-tung-khou
Shang-yao-chên
Liu-fu
Tsung-phu



Ma-chan
Wei Ho
Chu-tchêng
Shi-liang-chuang
Thsing-tao
KIAO-CHOU
Ki-wu Shan
Yung-fu Shan
Ling-shan-wei
Thsing-kê-chuang
Sin-thai
Ao-yang
Thien ma Sh.
Kuan-shu
Shi-khiao
Shang-ye Shan
Tolosan I.
An-chuang-tien
Yi-shui
Mu-ling-kuan
Po-ma-kuan
Yao Sh.
Kung-ning
Ku-chên
Tchang-lu
Süe Shan
Su-thsun-tsi
Liang-tchêng-tsi
Hia-ho-so
Lang-ye thai I.
Mêng-yin
Liang-kiang
Kiu
Thao-khü-tsi
Ku
AN-KIA-KHOU BAY
Kiu-nü-kuan
To-chuang
Yi Ho
Ji-chao
nü
Tung-wen Ho
Chaili-ho
Thsün Ho
Thsing-tho-ssŭ
Shan
Sü-kung-tien
Sin-tien
Hia-yüan
Tower Pt
Kê-kou-tsi
Pan-tchêng
Ta-phing-tsi
Shu Ho
Pei-khe-tsi
Fei (Pi)
Fang Ho
Tsao-kou
An-tung-wei
Ki Shan
Su Ho
YI-CHOU
Chê-wang
Flat I.
Lung-wang-miao
Li-kia-chu-ang
Kan-yü
Siao Ho
Lo-thêng-tsi
Ku-ling Ho
Yi
Ma-chan
Thsing-khou
Chu-tu-khiao
Sha-ho
Hü-kou-tchêng
Ma-thou-tsi
Ting-kia-miao
Si-kia Ho
Than-tchêng
Siao-ho-khou
Yün-thai Shan
YÜ-CHOU I.
Wu-thiao-s
Ai-shan Ho
Ai Shan
Chung-hing-tsi
Tho-fêng
Hai
Fêng-huang-tchêng
Nan-tchêng
Tchi-an-chên
Fang-shan-chên
Hung-hua-pu
mu Shan
Kia-kou
Sin-pa-chên
Pan-phu
Phei
Liu-ma-chuang
Sü-thang-khou
Yi Ho
Tha Shan
Sang-khü
L. Thsing-yi
Ta-yi-chên
Chung-chên
L. Lo-ma
Ssŭ-wu
Ma-chuang-tsi
Shu-yang
Yao-wan
Chang-shan-phu
Shu Ho
L. Shi-hiang
Ku Shan
Kiu-lung-miao
Hu-kia-tsi
Sin-an-chên
Old mouth of the Yellow River
Sin-an-tsi
Su-thsien
Shun-ho-tsi
Lake Po-thang
L. Fan-kia-wa
Wu-kiang-khou
Siao-ho-khou
Yang-hua-tsi
Kien-khiao
Shuang-ya
Sui-ning
Ku-tchêng
Pei-sha-chên
Thsui-chên
Chung-hing-tsi
Yen Ho
Yü-kou-tsi
An-tung
Fou-ning
Shê-ya
Ho
Thao-yüan
Wang-kia-ying
Miao-wan-ying
Thsing-yang-tsi
Thsing-kiang-phu
Shê-yang Ho
Thsing-ho
Shang-kang
Tchang-chi-kou
HUAI-AN
Sin-hing-tchang
Phing-ho-khiao
Po-yang-thsun
Ssŭ
Lêng-fan-tun
Lake Hung-tsê
Yen-tchêng
Tho Ho
Kao-kia-yen
King-ho
Hüang-phu
L. Ta-tsung
Shang-thang-tsi
Pao-ying
Lake Pao-ying
Pei-hung-chuang
Tsiang-kia-pa
Fan-shui
L. Kuang-yang
Po-kü-tchung
Shuang-kou-chên
Fou-shan
Sha-kou-chên
Pao-kia-tsi
Kie-shou
Kuan-kung-tien
Lin-tsê-chên
An-têng-chên
Lin-huai-chên (Hao-liang)
Hü-yi
Lu-an-kou
Kiü-hien
Lake Kao-yu
Hing-hua
Tcha-kia-tu
Kao-Yu
L. Lu-yang
Ling-thing-chên
Tung-t
Kiu-phu-chên
L. Shao
Tsung-phu

UM

Yung-fu Shan
Yi-shui
Süe Shan
Kuan-shu
An-chuang-tien
Kung-ning
Shi-khiao
Shang-ye Shan
Ling-shan-wei
Mu-ling-kuan
Ku-chêng
Liang-tchêng-tsi
Hia-ho-so
Liang-kiang
Teha-lien I.
Tolosan I.
Lang-ye thai I.
AN-KIA-KHOU BAY
Yi Ho
Ji-chao
Chaili-ho
Sin-tien
Hia-yüan
Tower Pt
Shu Ho
Pei-khe-tsi
An-tung-wei
CHOU
Chê-wang
Flat I.
Lung-wang-miao
Kan-yü
Thsing-khou
Chu-tu-khiao
Sha-ho
Siao-ho-khou
Hü-kou-tchêng
Yün-thai Shan
YU-CHOU I.
Fêng-huang-tchêng
Nan-tchêng
Tho-fêng
Hai
Tchi-an-chên
Fang-shan-chên
Wu-thiao-Sha-Banks
Sin-pa-chên
Pan-phu
Tha Shan
Sang-khü
L. Thsing-yi
Ta-yi-chên
Chung-chên
Shu-yang
Shu Ho
L. Shi-hiang
Old mouth of the Yellow River
Hu-kia-tsi
Sin-an-chên
Ta-Sha or Great Sands
Wu-kiang-khou
Yang-hua-tsi
Kien-khiao
Shuang-yang Kiang
Chung-hing-tsi
Pei-sha-chên
Yen Ho
Yü-kou-tsi
An-tung
Fou ning
Shê-yang Ho
Thao-yüan
Wang-kia-ying
Miao-wan-ying
Thsing-kiang-phu
Shê-yang Ho
Thsing-ho
Po-Sha
HUAI-AN
Shang-kang
Man-tzu-
Phing-ho-khiao
Po-yang-thsun
Sin-hing-tchang
Yao-Sha
Kao-kia-yen
King-ho
Yen-tchêng
L. Ta-tsung
Huang-phu
Pao-ying
Lake
Yin-Sha
Tsang-kia-pa
Pao-ying Fan-shui
L. Kuang yang
Pei-sung-chuang
Po-kii-tchang
Kie-shou
Sha-kou-chên
Lin-tsê-chên
Tho-tzŭ-khao Sha
An-fêng-chên
Lu-an-kou
Lake Kao-yu
Hing-hua
Chang-kia S
Kao-Yu
L. Lu-yang
Ling-thing-chên
Tchêng-mên-hiang
Shi-liang Ho
L. Shao-po
Tung-thai
Fan-tcha-chên
Ning-hiang
Fu-an-tchang
Thien-tchang

PREPARED IN THE

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE, MILITARY INFORMATION DIVISION,

WASHINGTON, U.S.A.

1900.

SCALE

10 0 10 20 30 40 50 MILES.

CONVENTIONAL SIGNS.

- *Boundary of Provinces.*
- *Boundary of Mongol clans or banners.*
- Fu – *Capital of Province.*
- Fu – *Prefectural City, or City of 1st order.*
- Chi-li-Chou *or simply* Chou – *independent Department City, or City of 2nd order.*
- Chou – *Department City, or City of 2nd order.*
- Hien – *District City, or City of 3rd order.*
- Thing – *Subprefectural City.*
- Yi – *Post-town.*
- *Small Town, Village.*
- *Imperial Tombs.*
- *Mountain Pass.*
- *Main Roads.*
- *Smaller Roads.*
- *Rail Roads.*
- *Rail Roads Projected.*
- *Great Wall.*
- *Place where a river becomes navigable for larger boats.*
- *Place where a river becomes navigable for smaller boats.*

Heights in feet.

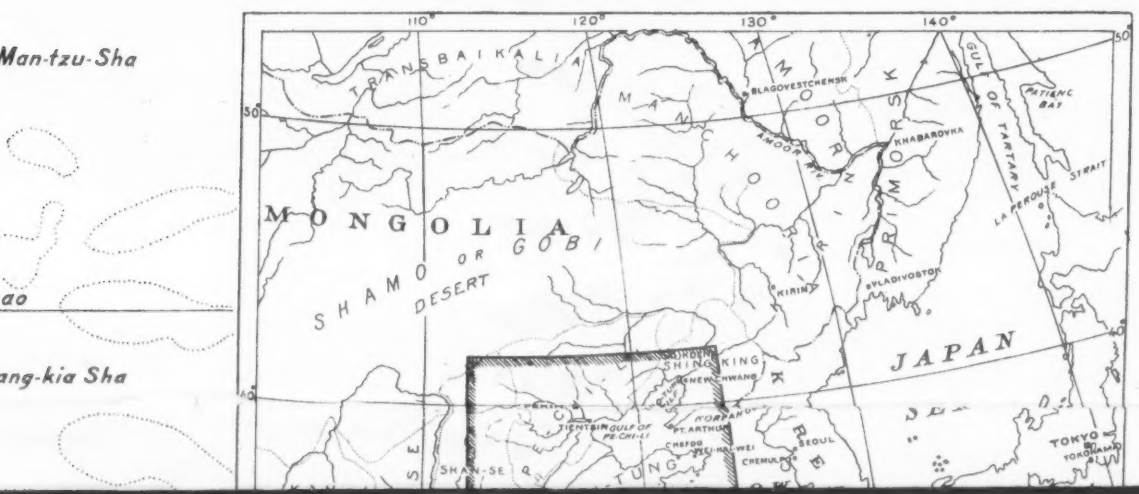
NATIVE TERMS IN USE.

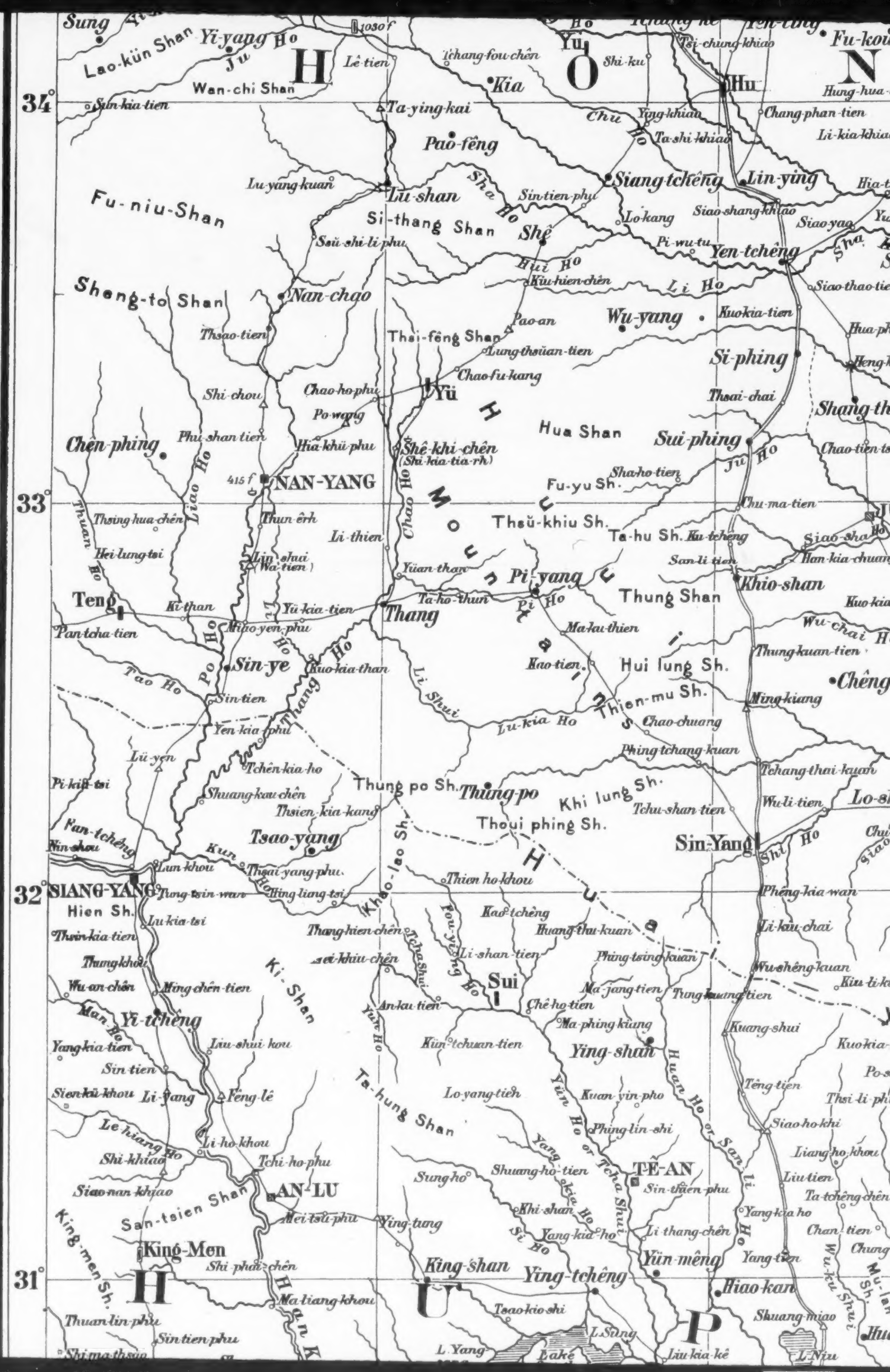
At the end of geographical names:

Kiang, Ho, Tchuan, Ula, Muren, Tchu — *Stream, River.*
Shui, Kou, Thsuan, Khi, Gol, Ussu — *Streamlet, small River.*
Hu, Nor, Omo — *Lake.*
Po, Tsê, Tien — *small Lake, Swamp.*
Hai — *Sea, sometimes Lake.*
Tao, Shan (*properly meaning mountain*) *Island.*
Than — *Rapids.*
Sha — *Sands.*
Shan, Alin, Hada — *Mountain, Mountain Range.*
Ling — *Pass over a Mountain ridge, sometimes Mountain range.*
Khou — *Mouth of a River or Pass, often used to designate a place situated at the mouth of a River or Pass.*
Tchêng, Chên, Balgasu, Holo or Holun-*Town, large Village.*
Chuang, Phu, Tien, Thsun, Tsi, Thun, Ssŭ, Tchang — *Borough, Village.*
Kuan, Chai, Ying, So, Wei — *Fortified military Place, Camp.*
Khiao — *Bridge.*
Miao — *Temple.*
Mên — *Gate.*

At the beginning of geographical names:

Ta — *Great.*
Siao — *Small.*
Pei — *North.*
Nan — *South.*
Hei (*in Mongol* Hara) — *Black.*
Huang (*in Mongol* Shara) — *Yellow.*
Pai or Po (*in Mongol* — Tsagan — *White.*
Si — *West.*
Tung — *East.*
Shang — *Upper.*
Hia — *Lower.*




34°
33°
32°
31°
H
O
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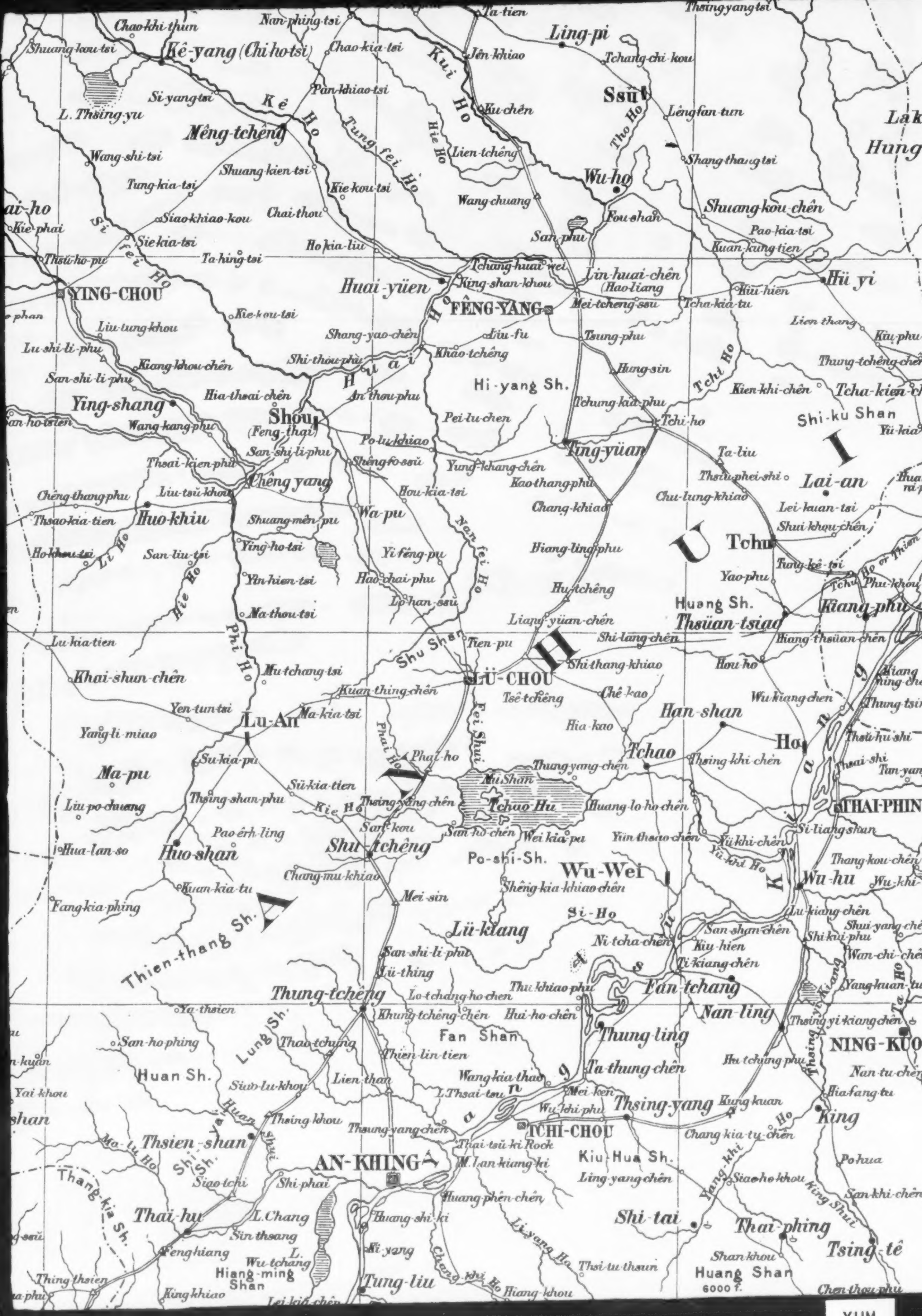
P
Sung
Lao-kün Shan
Yi-yang
Ho
Ju
1030 f
Lê-tien
Tchang-fou-chên
Yu
Kia
Shi-ku
Tsi-chung-khiao
Hu
Fu-kou
Hung-hua
Wan-chi Shan
Sün-kia-tien
Ta-ying-kai
Chu Ho
Ying-khiao
Chang-phan-tien
Ta-shi-khiao
Li-kia-khiao
Pao-fêng
Lu-yang-kuan
Lu-shan
Sha Ho
Siang-tchêng
Lin-ying
Sin-tien-phu
Fu-niu-Shan
Si-thang Shan
Lo-kang
Siao-shang-khiao
Siao-yao
Shê
Seü-shi-li-phu
Pi-wu-tu
Yen-tchêng
Hui Ho
Kü-hien-chên
Li Ho
Siao-thao-tien
Sheng-to Shan
Nan-chao
Wu-yang
Kuo-kia-tien
Pao-an
Thsao-tien
Thai-fêng Shan
Lung-thsüan-tien
Si-phing
Chao-fu-kang
Shi-chou
Chao-ho-phu
Yü
Thsai-chai
Po-wang
Shang-th
Hua Shan
Chên-phing
Phu-shan-tien
Hia-khü-phu
Shê-khi-chên
(Shi-kia-tia-rh)
Sui-phing
Chao-tien-ts
Liao Ho
415 f
NAN-YANG
Sha-ho-tien
Ju Ho
Fu-yu Sh.
Chao Ho
Mountains
Thsing-hua-chên
Thun-êrh
Chu-ma-tien
Thuan Ho
Li-thien
Thsü-khiu Sh.
Ta-hu Sh.
Ku-tcheng
Siao-sha Ho
Han-kia-chuang
Hei-lung-tsi
Lin-shui
(Wa-tien)
Yüan-than
San-li-tien
Pi-yang
Thung Shan
Khio-shan
Teng
Ki-than
Yü-kia-tien
Ta-ho-thun
Pi Ho
Kuo-kia
Pan-tcha-tien
Miao-yen-phu
Thang
Ma-lau-thien
Wu-chai Ho
Li Ho
Thung-kuan-tien
Po Ho
Sin-ye
Kuo-kia-than
Li Shui
Kao-tien
Hui lung Sh.
Chêng
Tao Ho
Sin-tien
Thang Ho
Thien-mu Sh.
Ming-kiang
Yen-kia-phu
Lu-kia Ho
Chao-chuang
Lü-yen
Phing-tchang-kuan
Tchên-kia-ho
Tchang-thai-kuan
Pi-kia-tsi
Thung po Sh.
Thung-po
Khi lung Sh.
Shuang-kau-chên
Wu-li-tien
Lo-s
Thsien-kia-kang
Tchu-shan-tien
Thoui phing Sh.
Fan-tchêng
Tsao-yang
Sin-Yang
Shi Ho
Nin-shou
Kun Ho
Khao-lao Sh.
Hua
Lun-khou
Thsai-yang-phu
Thien-ho-khou
SIANG-YANG
Tung-tsin-wan
Hing-liang-tsi
Phêng-kia-wan
Hien Sh.
Kao-tchêng
Lu-kia-tsi
Huang-thu-kuan
Li-kau-chai
Thsin-kia-tien
Thang-hien-chên
Tcha Shui
Fou-yüng Ho
Thungkhou
Sei-khiu-chên
Li-shan-tien
Phing-tsing-kuan
Wu-shêng-kuan
Ki Shan
Kiu-li-k
Wu-an-chên
Ming-chên-tien
Sui
Ma-jang-tien
Tung-kuang-tien
An-lu-tien
Han Ho
Chê-ho-tien
Yi-tchêng
Yün Ho
Ma-phing-kiang
Kuang-shui
Yang-kia-tien
Liu-shui-kou
Kün-tchuan-tien
Ying-shan
Kuo-kia
Sin-tien
Huan Ho or San Li Ho
Po-s
Sien-kü-khou
Li-fang
Fêng-lê
Ta-hung Shan
Lo-yang-tien
Kuan-yin-pho
Têng-tien
Thsi-li-ph
Le hiang Ho
Yün Ho or Tcha Shui
Phing-lin-shi
Siao-ho-khi
Li-ho-khou
Yang Ho
Liang-ho-khou
Shi-khiao
Tchi-ho-phu
Sung-ho
Shuang-ho-tien
TÊ-AN
Liu-tien
Siao-nan-khiao
AN-LU
Sin-thien-phu
Ta-tchêng-chên
San-tsien Shan
Kia Ho
Khi-shan
Yang-kia-ho
Mei-tsü-phu
Ying-tung
Si Ho
Yang-kia-ho
Li-thang-chên
Chan-tien
King-men Sh.
King-Men
Chung
Shi-phai-chên
Han K
King-shan
Ying-tchêng
Yün-mêng
Yang-tien
Wu-ku Shui
Mu-lan Sh.
Hiao-kan
Ma-liang-khou
Tsao-kio-shi
Shuang-miao
Thuan-lin-phu
L. Sung
Hu
Sin-tien-phu
L. Yang
Lake
Liu-kia-kê
L. Niu
Shi-ma-thsao


Fu-kou
Thai-khang
Chê-tchêng
Wu-siang
Hui-thing
Tsan-yang
Yung-tchêng
Thsing-li-tsi
Sü-khi-khou
Hung-hua-tsi
Ma-tchang-tsi
Lu-kia-tsi
Tsün-hien-tchêng
Thie-fo-ssü
Po-shan-yi
Li-kia-khiao
Miao-kia-tsi
Lao-chung-tsi
Wu-ma-kou
Ssü-phu
Si-hua
Lu-yi
Chao-thsun
Po
Hia-thing
Liu-lin-tsi
Tchê kia pu-khou
Lang Shan
Su
TCHÊN-CHOU
Yung-ning-tsi
Chou-kia-khou
Tan-tchêng
Shi-tsü-ho
Sha-thu-tsi
Chi Ho
Shui-tchi-phu
Shang-shui
Fêng-thang-tsi
Chao-khi-thun
Nan-phing-tsi
Siao-thao-tien
Sin-chan-tsi
Lu-thai
Shuang-kou-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Fei-ho-khou
Hua-phi-tsi
Huai-tien-tsi
Si-yang-tsi
Pan-khiao-tsi
Heng-khiao
Ni-khiu-tsi
L. Thsing-yu
Kê Ho
Chi-tien-tsi
Mêng-tchêng
Tung fei Ho
Hiang-tchêng
Kie-shou-tsi
Wang-shi-tsi
Shang-thsai
Shên-khiu
Shuang-kien-tsi
Fên Ho
Tung-kia-tsi
Kie-kou-tsi
Hung Ho
Sha Ho
Kiu-hien
Thai-ho
Chao-tien-tsi
Siao-khiao-kou
Chai-thou
Shê-khiao-tsi
Thung-yang-chên
Kie-phai
Si fei Ho
Sie-kia-tsi
Ho-kia-liu
Shên-khiu-tsi
Ta-hing-tsi
JU-NING
Thsü-ho-pu
Fang-kia-tsi
YING-CHOU
Huai-yüen
Yang-pu-chên
Wa-tien-tsi
Tchang-kuan-tien
Kie-kou-tsi
Phing-yü-tchêng
Liu-tung-khou
Shang-yao-chên
Kuo-kia-tien
Sin-thsai
Lu-shi-li-phu
Shi-thou-phu
Ku Ho
Kiang-khou-chên
Ju Ho
San-shi-li-phu
Huai
Ju-nan-chên
Hia-thsai-chên
Yu-fang-tien
Thao-hua-tien
Ying-shang
An-thou-phu
Shou
Chêng-yang
San-ho-tsien
Wang-kang-phu
(Feng-thai)
Po-lu-khiao
Huai Ho
San-shi-li-phu
Phêng-kia-tien
Siao-huang Ho
Thsai-kien-phu
Shêng-fo-ssü
Khü Ho
Chêng-yang
Si
Chêng-thang-phu
Liu-tsü-khou
Chung-thu-tien
Ho
Thsao-kia-tien
Huo-khiu
Shuang-mên-pu
Wa-pu
Pao-tsü-khou
Tchun-ho-phu
Lo-shan
Huang Ho
Huang-ssü-kang
Ku-shi
Ho-khou-tsi
Li Ho
San-liu-tsi
Ying-ho-tsi
Yi-fêng
Chai-ho
Chu-kan-phu
Siao
Chu-kan Ho
Chai Ho
Kuang
Hie Ho
Yin-hien-tsi
Hao-chai-p
Tchun Ho
Shi-fo-tien
Kuang-shan
Shi-thsao Ho
Ma-thou-tsi
Lu-kia-tien
Phi Ho
Huai-shu-tien
Mu-tchang-tsi
Shang-tchêng
Khai-shun-chên
Pho-pei-ho
Kuan-thing
Su-sien-tsi
Yen-tun-tsi
Ma-kia-tsi
Kiu-li-kuan
Shi-kia-ho
Lu-An
Tchun-shu-tien
Yang-li-miao
Wu-shui-kuan
Phai Ho
Su-kia-pu
Kuo-kia-tien
Tchang-than-tien
Ma-pu
Lung-wang-miao
Sü-kia-tien
Mu-ling-kuan
Thsing-shan-phu
Kie Ho
Po-sha-kuan
Liu-po-chuang
Pass
Fên-shui-ling
Liang-lu-khou
Pao-êrh-ling
Thsi-li-phing
Huo-shan
Shu-tchê
Tchang-ling-kuan
Sung-tsu-kuan
Hua-lan-so
Chang-mu-khiao
Fou-khiao Ho
Wang-fu-tien
M ts.
To-yün-chên
Kuan-kia-tu
Huang-an
Fang-kia-phing
Tsêng Shan
Thien-thang Sh.
Yen-kia-ho-shi
Chung-kuan
Ma-tchêng
Thêng-kia-phu
Hua kia Ho
Chung-ho-ssu
Thung-tchêng
Sung-pu-chen
Mu-lan Sh.
Li-kia-lou
Ya-thsien
Wu-ku Shui
Khi-thing-chên
Kiu-tsu Ho
Lung Sh.
Phing-hu-tien
Kia-phu
San-ho-phing
Thao-tchung
Sha-ho-chên
Huang-pei
Lo-thien
Liu-lin-kuan
Tao-kuan Ho
Thsang-tsü-pu
Yu Ho
Huan Sh.
Siu-lu-khou
Lien-than
Yai-khou



Ta-tien
Thsing-yang-tsi
Nan-phing-tsi
Chao-khi-thun
Shuang-kou-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Jên-khiao
Ling-pi
Tchang-chi-kou
Kui Ho
Ssŭ
Si-yang-tsi
Pan-khiao-tsi
L. Thsing-yu
Kê Ho
Ku-chên
Lêng-fan-tun
Tung fei Ho
Hie Ho
Tho Ho
Mêng-tchêng
Lien-tchêng
Shang-thaug-tsi
Wang-shi-tsi
Shuang-kien-tsi
Tung-kia-tsi
Kie-kou-tsi
Wu-ho
Wang-chuang
Shuang-kou-chên
Siao-khiao-kou
Chai-thou
Fou-shan
Pao-kia-tsi
Kie-phai
Si fei Ho
San-phu
Kuan-kung-tien
Sie-kia-tsi
Ho-kia-liu
Thsü-ho-pu
Ta-hing-tsi
Tchang-huai-wei
Lin-huai-chên (Hao-liang)
Hü yi
YING-CHOU
Huai-yüen
King-shan-khou
Kiu-hien
FÊNG-YANG
Mei-tcheng-ssu
Tcha-kia-tu
Kie-kou-tsi
Liu-tung-khou
Shang-yao-chên
Liu-fu
Tsung-phu
Lien thang
Lu-shi-li-phu
Shi-thou-phu
Khao-tchêng
Kiang-khou-chên
Huai Ho
Hung-sin
Tchi Ho
Thung-tchêng-chên
San-shi-li-phu
Hi-yang Sh.
Kien-khi-chên
Tcha-kien
Ying-shang
An-thou-phu
Shi-kü Shan
Wang-kang-phu
Shou (Feng-thai)
Pei-lu-chen
Tchung-kia-phu
Tchi-ho
Po-lu-khiao
Ting-yüan
Ta-liu
San-shi-li-phu
Shêng-fo-ssü
Yung-khang-chên
Thsai-kien-phu
Thsiu-phei-shi
Lai-an
Chêng yang
Kao-thang-phu
Chêng-thang-phu
Liu-tsü-khou
Hou-kia-tsi
Chu-lung-khiao
Huo-khiu
Chang-khiao
Lei-kuan-tsi
Thsao-kia-tien
Shuang-mên-pu
Wa-pu
Shui-khou-chên
Nan fei Ho
Ying-ho-tsi
Yi-fêng-pu
Hiang-ling-phu
Tchu
Ho-khou-tsi
Li Ho
San-liu-tsi
Tung-kê-tsi
Hie Ho
Yin-hien-tsi
Hao-chai-phu
Yao-phu
Hu-tchêng
Phu-khou
Lo-han-ssü
Huang Sh.
Ma-thou-tsi
Kiang-phu
Liang-yüan-chên
Thsüan-tsiao
Shi-lang-chên
Hiang-thsüan-chên
Lu-kia-tien
Shu Shan
Tien-pu
Phi Ho
Shi-thang-khiao
Hou-ho
Khai-shun-chên
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LÜ-CHOU
Tsê-tchêng
Chê-kao
Kuan-thing-chên
Wu-kiang-chen
Thung-tsin
Yen-tun-tsi
Lu-An
Ma-kia-tsi
Fei Shui
Han-shan
Yang-li-miao
Hia-kao
Ho
Thsu-hu-shi
Phai Ho
Su-kia-pu
Phai-ho
Tchao
Thsing-khi-chên
Thsai-shi
Tan-yang
Ma-pu
Thung-yang-chên
Sü-kia-tien
Kü Shan
Thsing-shan-phu
Kie Ho
Thsing-yang-chên
Tchao Hu
Huang-lo-ho-chên
THAI-PHING
Liu-po-chuang
Pao-êrh-ling
San-kou
Si-liang-shan
San-ho-chên
Wei kia-pu
Yin-thsao-chên
Yü-khi-chên
Hua-lan-so
Huo-shan
Shu-tchêng
Thang-kou-chên
Po-shi-Sh.
Yü khi Ho
Wu-Wei
Chang-mu-khiao
Wu-hu
Wu-khi
Kuan-kia-tu
Shêng-kia-khiao-chên
Mei-sin
Fang-kia-phing
Lu-kiang-chên
Si-Ho
San-shan-chên
Shui-yang-chên
Lü-kiang
Ni-tcha-chên
Kiu-hien
Shi-kui-phu
Thien-thang Sh.
San-shi-li-phu
Ti-kiang-chên
Wan-chi-chên
Lü-thing
Fan-tchang
Thu-khiao-phu
Yang-kuan-tu
Thung-tchêng
Lo-tchang-ho-chen
Nan-ling
Ta Ho
Ya-thsien
Khung-tchêng-chên
Hui-ho-chên
Thsing-yi-kiang-chên
Fan Shan
Thung-ling
Thsing yi Kiang
NING-KUO
San-ho-phing
Thao-tchung
Lung Sh.
Thien-lin-tien
Hu-tchung-phu
Nan-tu-chên
Wang-kia-thao
Ta-thung-chên
Huan Sh.
Siun-lu-khou
Lien-than
Hia-fang-tu
L. Thsai-tsu
Mei-ken
Yai-khou
Wu-khi-phu
Thsing-yang
Kung-kuan
Thsing-khou
Huan Shui
King
Thsung-yang-chên
TCHI-CHOU
Chang-kia-tu-chên
Thsien-shan
Thai-tsü-ki Rock
Kiu-Hua Sh.
Ma-tu Ho
Shi-Ya Sh.
AN-KHING
M. Lan-kiang-ki
Po-hua
Thang-kia Sh.
Ling-yang-chên
Yang-khi Ho
Siao-tchi
Shi-phai
Siao-ho-khou
King Shui
San-khi-chên
Huang-phên-chên
Thai-hu
L. Chang
Huang-shi-ki
Shi-tai
Thai-phing
Sin-thsang
Li-yang Ho
Fenghiang
Ki-yang
Tsing-tê
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Wu-tchang
Shan-khou
Hiang-ming Shan
Chang-khi Ho
Thsi-tu-thsun
Thing-thsien
Huang Shan 6000 f.
Tung-liu
King-khiao
Hiang-khou
Lei-kia-chên
Chen-thou-phu
Ta Kiang
A N H U I
K I A N G S U


Thsing-kiang-phu
Thsing-ho
Shê-yang Ho
Miao-wan-ying
Po-Sha
HUAI-AN
Shang-kang
Sin-hing-tchang
Yen-tchêng
Yao-Sha
Lake Hung-tsê
Phing-ho-khiao
Kao-kia-yen
King-ho
L. Ta-tsung
Po-yang-thsun
Huang-phu
Pao-ying
Lake Pao-ying
Yin-Sha
Tsiang-kia-pa
Fan-shui
L. Kuang yang
Pei-sung-chuang
Po-kai-tchung
Kie-shou
Sha-kou-chên
Tho-tzŭ-kha Sha
Lin-tsê-chên
An-fêng-chên
Lu-an-kou
Lake Kao-yu
Hing-hua
Kao-Yu
L. Lu-yang
Ling-thing-chên
Kiu-phu-chên
Tchêng-mên-hiang
Shi-tiang Ho
L. Shao-po
Tung-thai
Fan-tcha-chên
Ning-hiang
Fu-an-tchang
Thien-tchang
Phing Shan
Lu-kin
Shao-po-chên
Yü-kia-wa
Siao-tien
Ta-yi-chên
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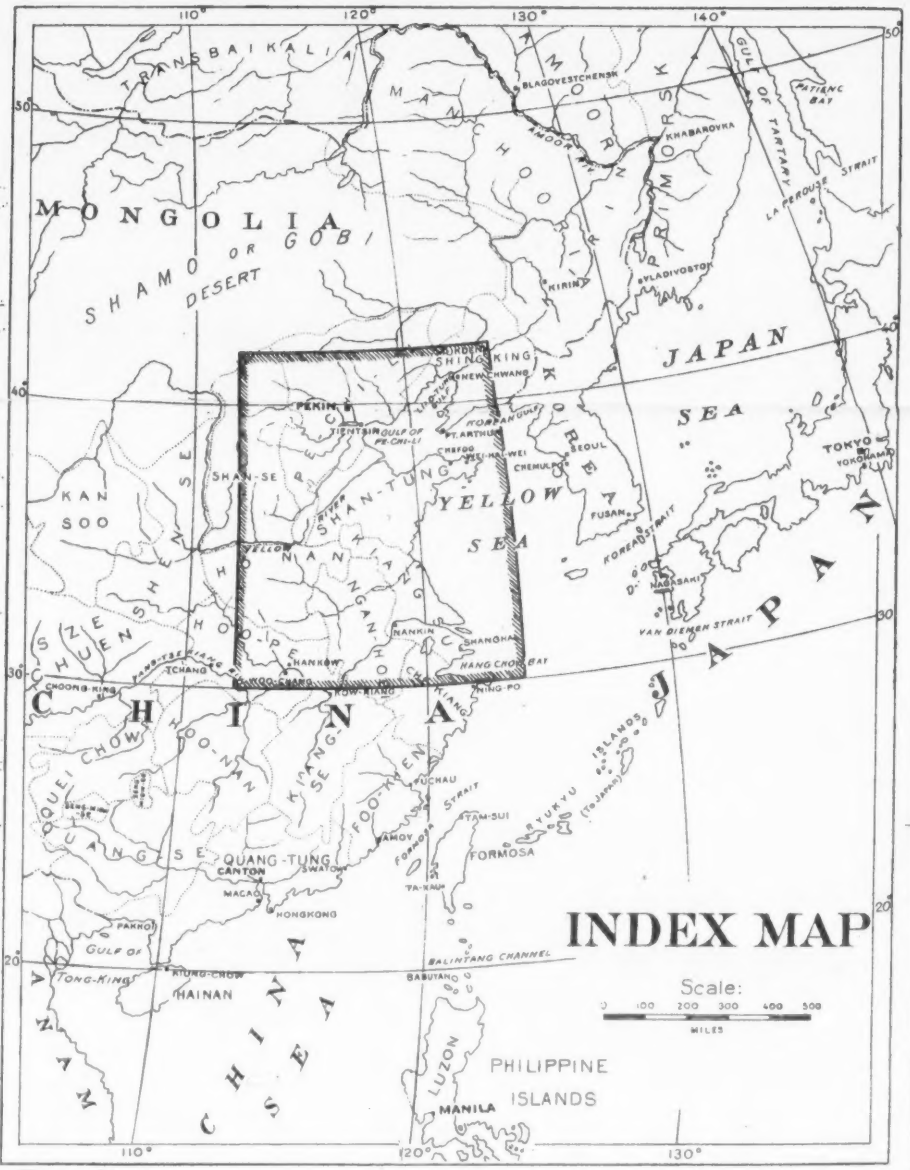
Cha-phu
Tê-thsing
Shuang-lin
Hai-yen

At the beginning of geographical names:

Ta—*Great*.	Hei (*in Mongol* Hara)—*Black*.	Si—*West*.
Siao—*Small*.	Huang (*in Mongol* Shara)—*Yellow*.	Tung—*East*.
Pei—*North*.	Pai or Po (*in Mongol* ——	Shang—*Upper*.
Nan—*South*.	Tsagan—*White*.	Hia—*Lower*.



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Middle Seshan

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S. Saddle

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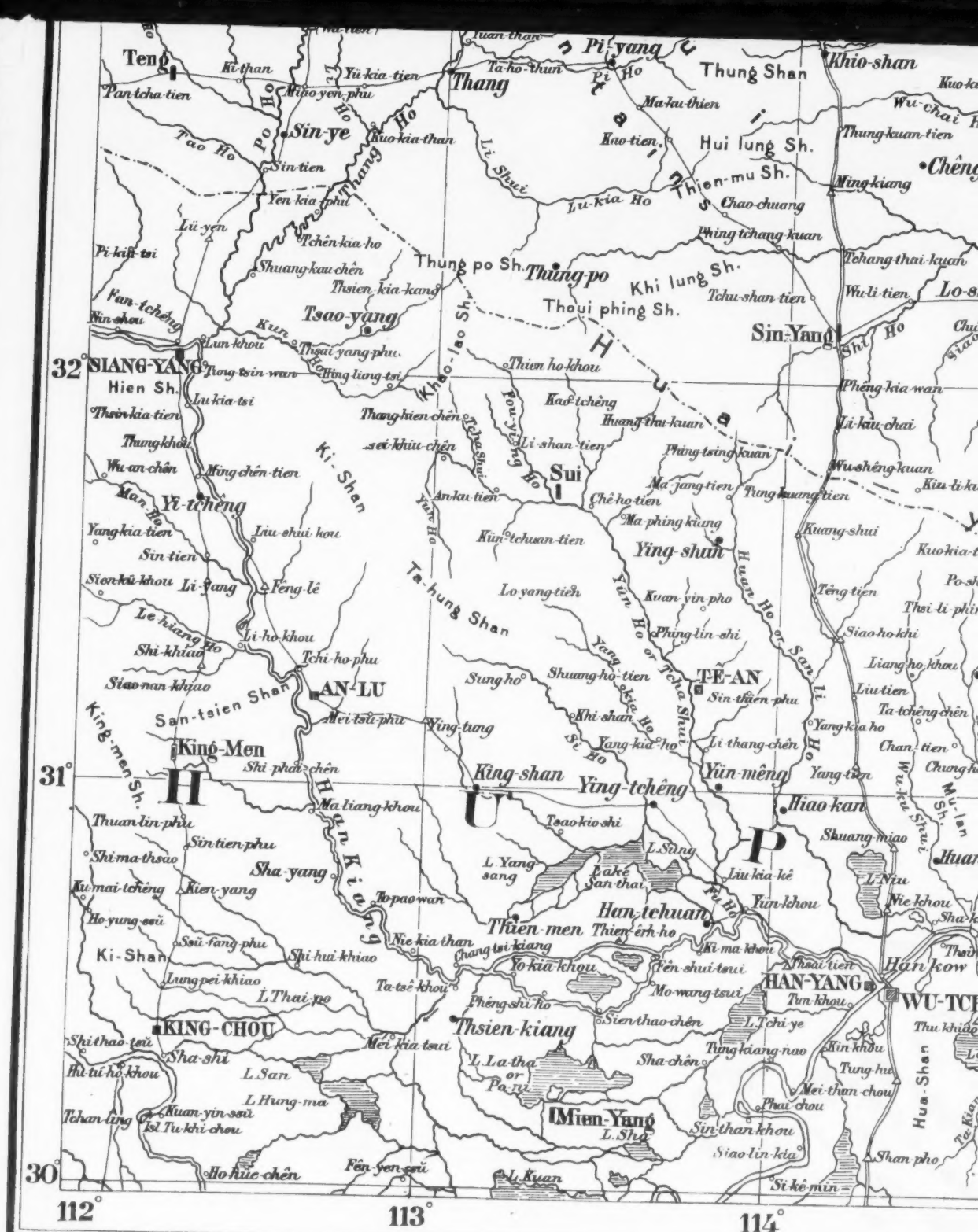

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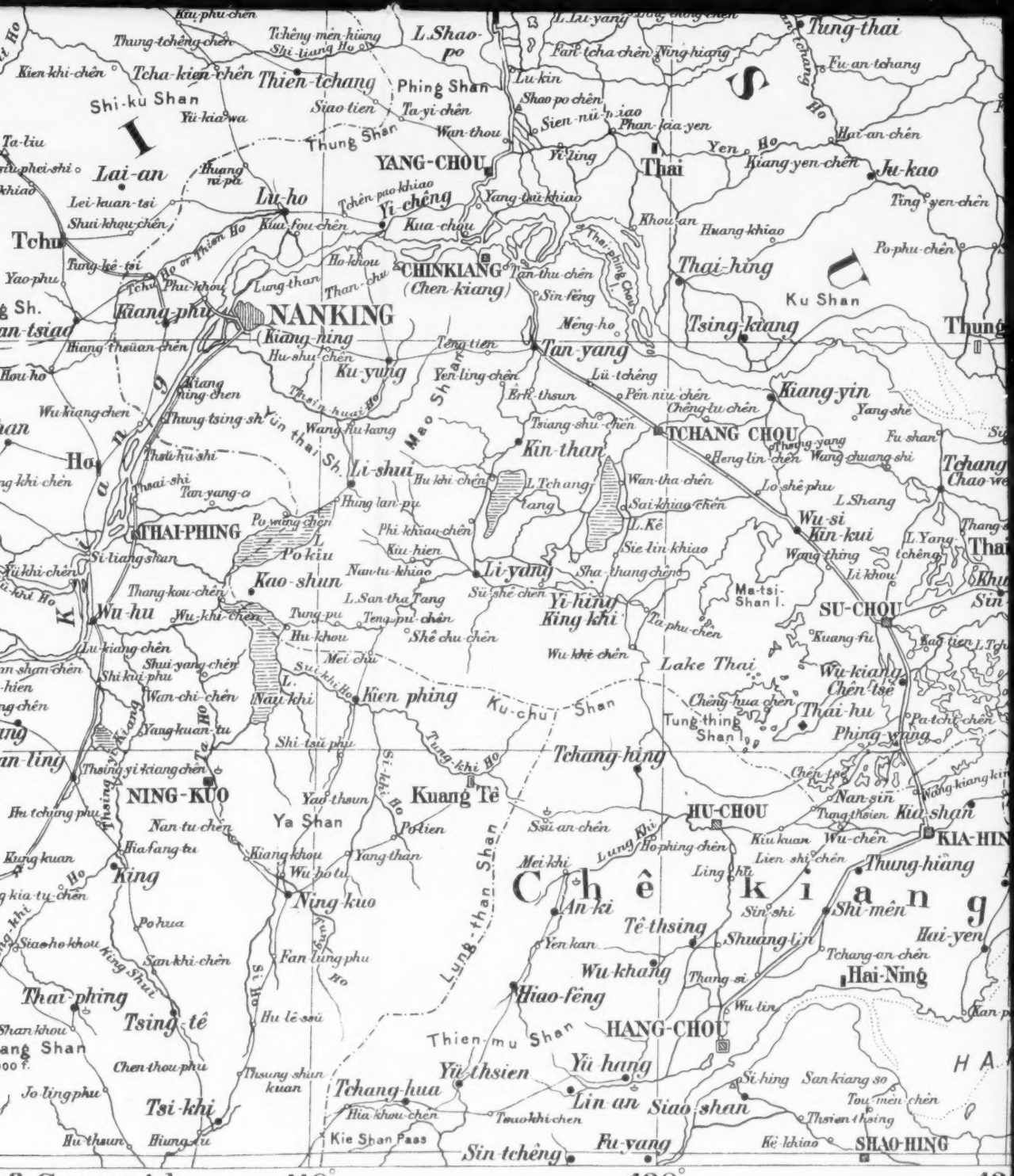

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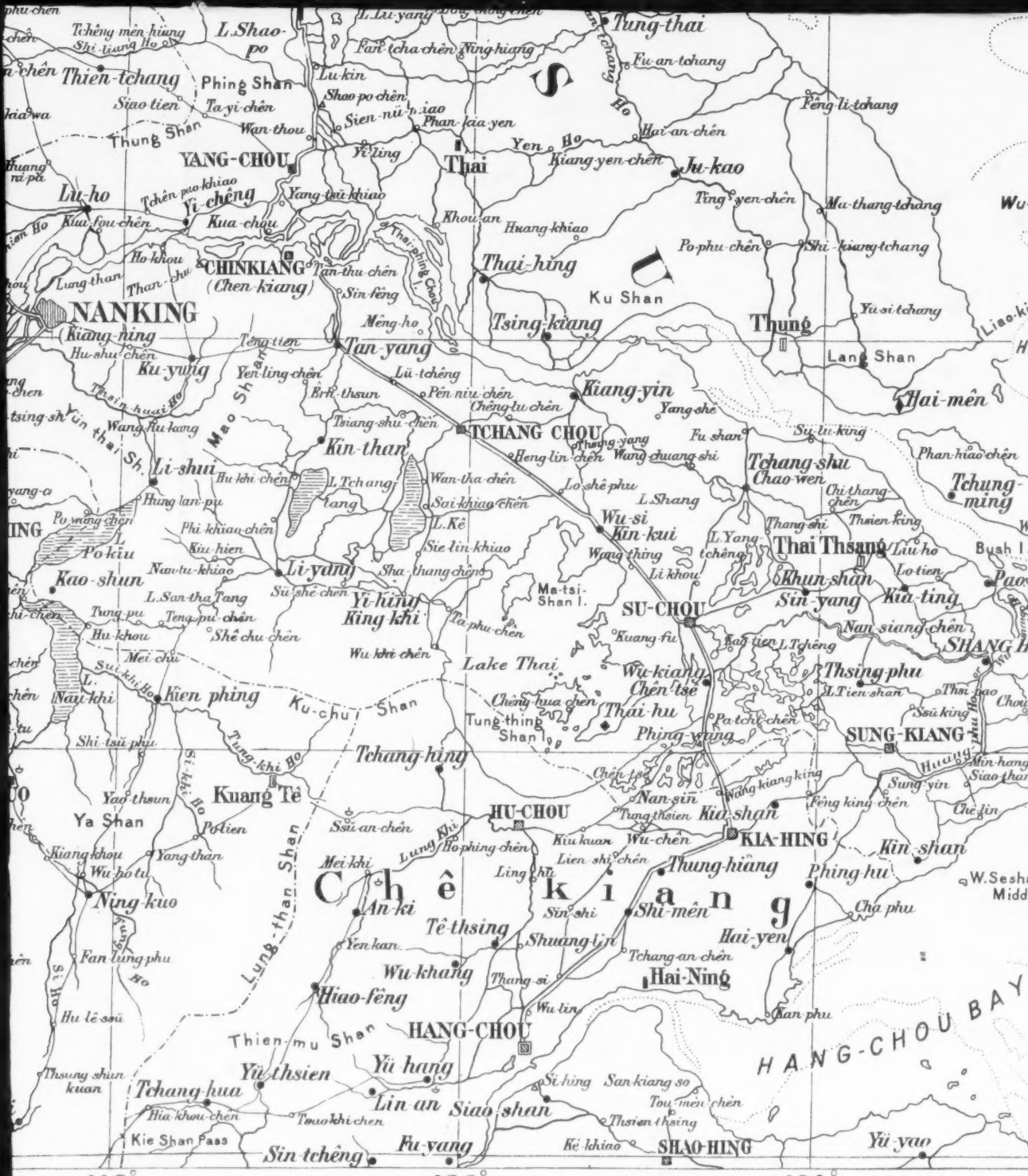

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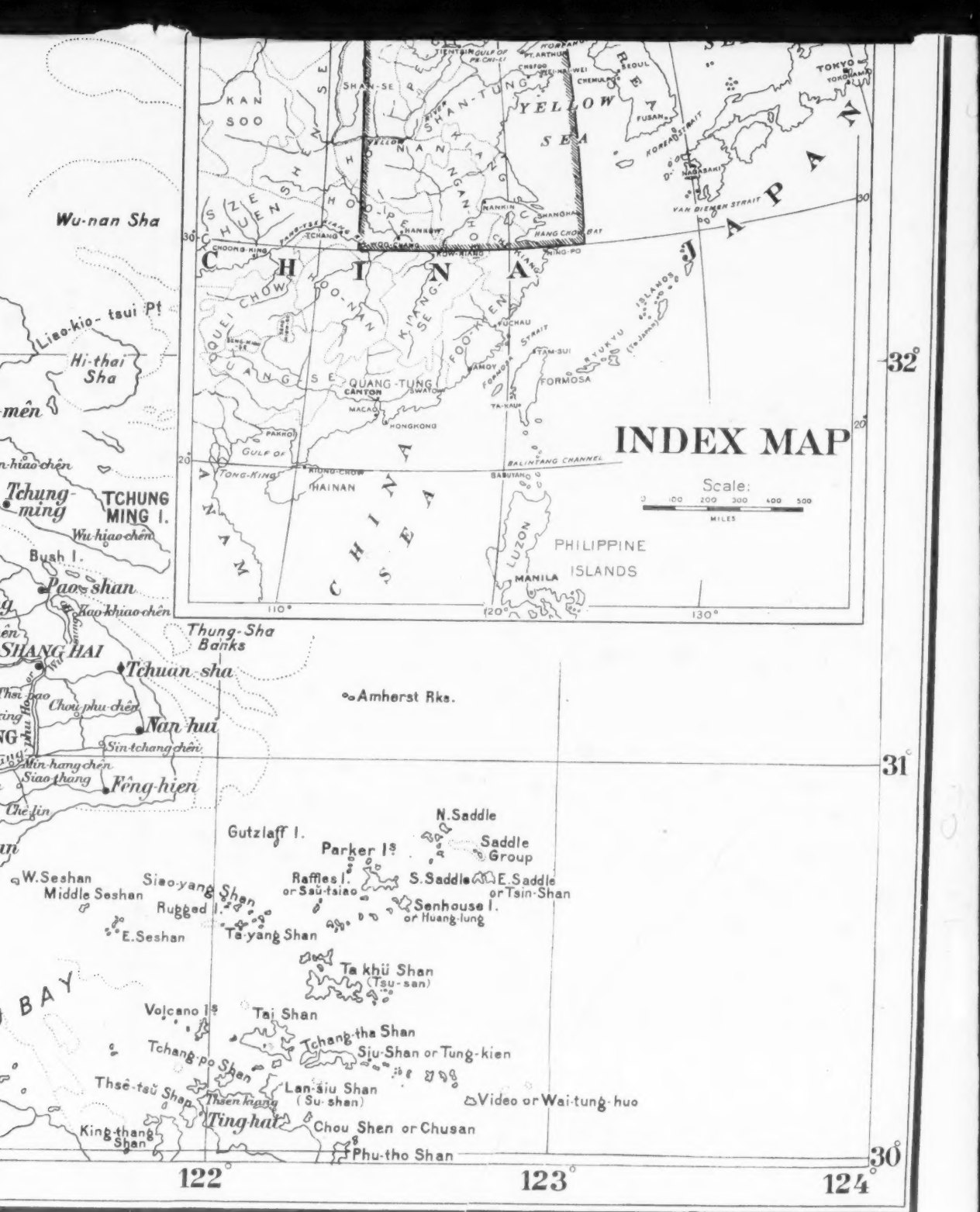

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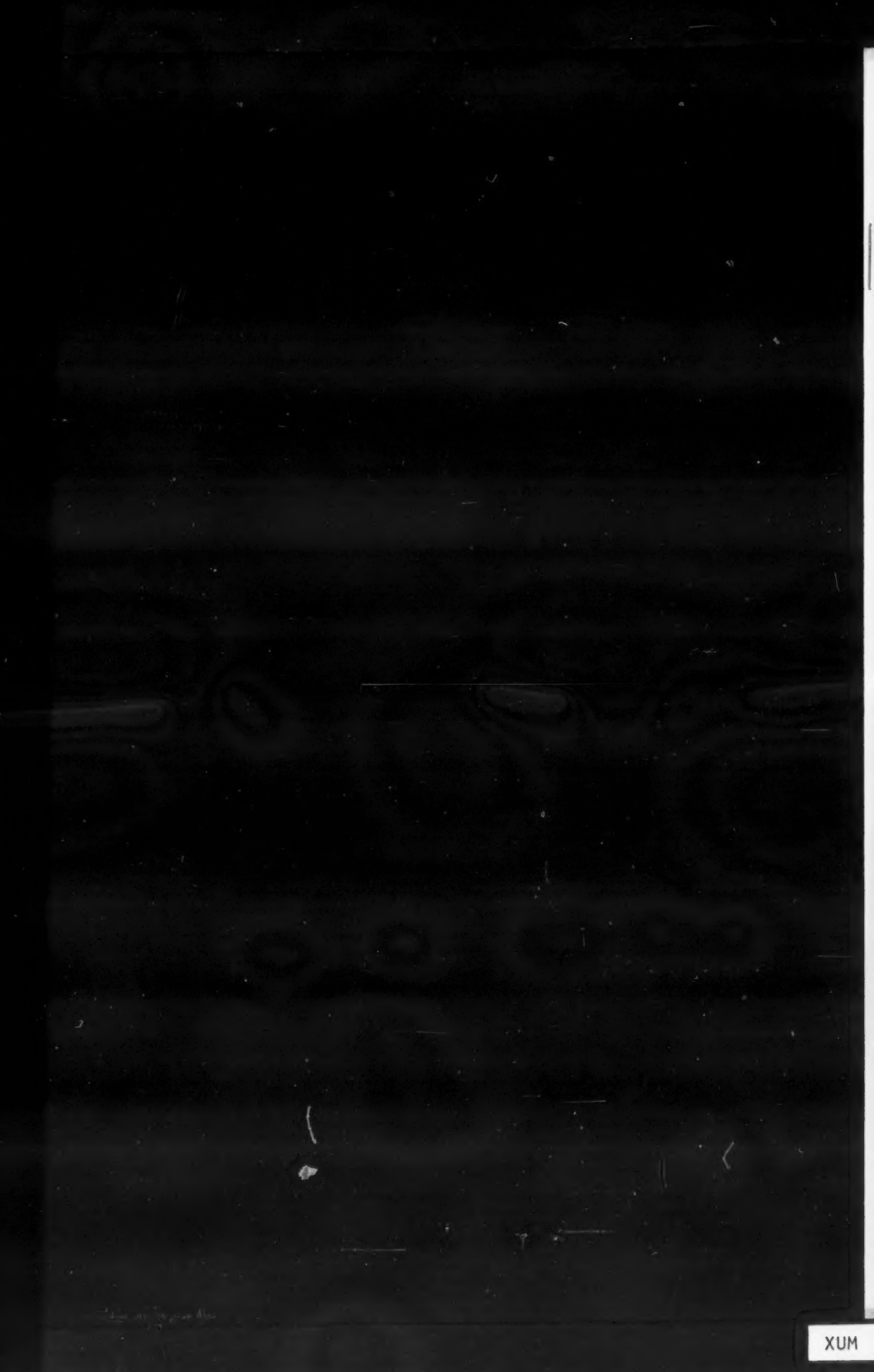
SEPTEMBER, 1900.



THE
NATIONAL GEOGRAPHIC MAGAZINE

VOL. XI SEPTEMBER, 1900 No. 9

THE COLORADO DESERT

By DAVID P. BARROWS

The Colorado River, its cañon valley, and flood-plain constitute a series of physiographic conformations of impressive variety. The upper part of its course has been eroded across the great elevated plain of western America, through which it has cut its channel downward with so great rapidity that its valley walls, almost unaffected in comparison by weathering, rise sheer upward in the gigantic system of gorges known as the Grand Cañon of the Colorado. From the point where it enters California it is no longer a downward eroding stream, but sweeps grandly across the sterile plain of the desert, a dark, sediment-laden current, swinging back and forth across its widening valley. As it nears the Gulf of California and the rapidity of its stream lessens, the enormous loads of fine rock material, cut from the valleys through which it has torn its way, are deposited in a great flood-plain or delta, across which the stream pours south into the gulf.

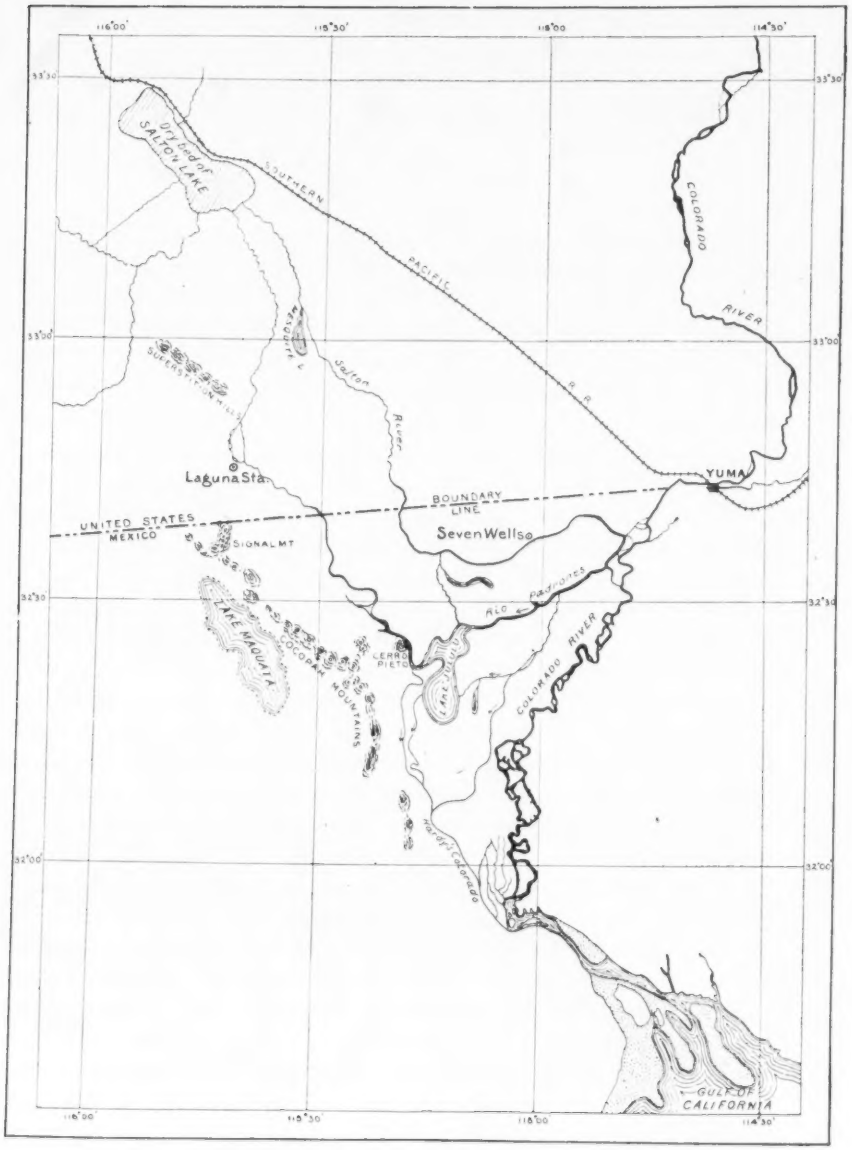
As above this delta the low banks are unwatered, except at the very margins of the river, the sterility of the surrounding country is unaffected by its immense volume of water.

From whatever direction you approach the river within California or Arizona, the trail lies across sandy hill and thirsty plain, where are the dark marks of old volcanic activity, grotesque rock forms, shaped by wind erosion, and occasional stunted clumps of desert plants, with extremely modified foliage; but nowhere is there suggestion that you are upon the banks of the mightiest river of western America, until suddenly the ground drops slightly, and in an instant there come the dark green coloring of mesquite growth, the bright foliage of cottonwood and willow, the dazzling gleam of wide waters, flowing swiftly, and you are beside the long, shining river of Lopez de Cardenas and Alarcon.

The discovery of the Colorado is one of the romances in the history of the discovery of this continent. In August, 1540, only 48 years after the first voyage of Columbus, the three small ships of Captain Hernando de Alarcon, sent up the Gulf of California to coöperate with the land expedition of Coronado, arrived at the shallow, treacherous head of the great estuary, and, in the language of the chronicle, "it pleased God that after this sort they should come to the very bottom of the bay, where they found a mighty river, which ran with so great a fury of a stream that they could hardly sail against it. So they entered into two boats, which men towed along with ropes from the shore." Up this river, which he named the "Buena Guia," cultivating friendly relations with its numerous Indian peoples, Alarcon went as far, it is believed, as the junction of Williams Fork, 85 leagues, according to the Relacion, "to where the river forms a straight channel between high mountains."

In the same months that Alarcon was dragging his boats up the turgid current, Coronado, now at the Pueblo of Zuñi, heard of the Moki Pueblos of Tusayan. Pedro de Tobar, with 20 men and a priest, made the expedition from Zuñi into that desolate corner of Arizona, where high on their mesas are still standing, as they stood then, the cliff villages of Hualpai and its companions. From these Indians Tobar heard of a great river flowing across the western desert, and returning with this information to Coronado, the chief dispatched Garcia Lopez de Cardenas to search for it. His little band, returning to the Moki villages, struck boldly out across the desolate plain of the "Painted Desert," and after days of travel stood on the brink of that chasm of chasms, the Grand Cañon of the Colorado. They gazed northward across the apparently unending buttes and gorges of the wonderful system, but were unable to reach the great river that looked like a slender rivulet far beneath them. "Its banks were so high," says the Relacion, "that they seemed to be raised three or four leagues into the air. The country is covered with little, stunted fir-trees, is exposed to the north, and is so cold that, although it was summer, we could hardly bear it."

Thus from sea and by land in the same year did the men of Spain discover the noble river of the Colorado at its most stupendous approaches. Almost at the same time a third little band, under Melchor Diaz, starting from the settlement of San Hieronymo, on the Rio Sonora, traversed Arizona from east to west and reached the banks of the Colorado which Alarcon had recently trodden. "In the



MAP SHOWING THE COLORADO DESERT REGION

course of less than six months," says Bandelier, "the Spanish reconnoitering corps had thus three times touched the largest river of western America, had explored its shores with tolerable accuracy for a considerable length of its course, and had also traveled in two directions through parts of Arizona which have only in very recent time again attracted attention."

The arid region of North America covers a large area. Throughout there is presented that strange uniformity of physical features and life-forms that characterizes deserts the world over. The southern portion of the Colorado Desert possesses, however, *bizarre* and curious features of its own. Its area is commonly understood to comprise the great depressed valley lying half in southern California and half in Lower California, inclosed on the west by the southward extensions of the San Jacinto Mountains, on the north by the desert range of the San Bernardino and Chocolate Mountains in California, and on the south by the course of the Colorado River from Arizona to the gulf.

In very recent geological times this region was an arm of the sea and the Colorado River reached the Pacific Ocean at Yuma. The geological changes that won this valley from the gulf seem to have been two: the upbuilding of an enormous delta from the deposits of the Colorado, and the crustal elevation of the earth beneath the central region covered by this delta to a height sufficient to divide the depression and to retire the gulf to its present shores far south of the line, while it left the upper part still below the level of the sea.* These movements turned the Colorado River into the region still depressed and transformed it into a splendid fresh-water lake. The evidence of the extent of this body of fresh water is most interesting. Its old floor remains, a deep accumulation of fine, fluviatile soil, rich as the delta of Egypt, which in places is whitened by myriads of fresh-water shells, several small univalves, and a single bivalve, varieties of *amnicola* and *anadrom* still to be found alive in the Colorado itself. For miles along the mountain bases at the northern end, where the still waters of the lake once reached, there runs a broad, white band of calcareous deposit from the tiny mollusca that at one time inhabited its shores. Gradually, however, the river which fed this lake by its constant deposits built up an elevated flood-plain about its mouth that diverted its waters more and more away from the lake until the main channel, impounded in levees of its own making, carried the current

*Salton, the lowest point in the desert, is given at 263 feet below sea-level, while Yuma is 275 feet above.

southward once more to the sea. The lake, fed irregularly and poorly, gradually dwindled as the silted banks of the Colorado became more secure, until it is represented today only by the Salton morass and other lagoons and the summer overflow streams by which these are supplied.

All this took place in very recent time. The Coahuila Indians, who today inhabit the upper end of the valley, have a distinct and credible tradition of the drying-up of this lake and of the occasional sudden return of its waters; and the Diegueños, who lived at a time when the supply of water along the central portion of the valley was probably much greater than at present, raised on the naturally irrigated soil abundant crops of maize, melons, and beans. But slowly the valley was abandoned to aridity. Almost unvisited by rainfall except about the edge of the mountains, the loss of the river left it cruelly dry. Low and inclosed between heat-reflecting ranges that shut off the breezes of the ocean, it gained a temperature which is one of the highest on the globe. The wind storms that rage up the valley from the southeast have drifted great dunes of sand over certain portions, and much of the country never reached by the deposits of the lake is as black, stony, and repulsive as eruptive rock formations in the desert can be. Apparently about the middle of the first half of the century the overflow from the Colorado was largely checked and not resumed to any extent until the year 1849. The Indians, who had lived in plenty along the central valley, were driven by the drought forever from their homes.

In November, 1847, the advance column of American troops, under Kearny, moving across from Fort Leavenworth for the conquest of California, crossed the desert from Yuma to San Diego. The troops suffered severely from thirst, finding no water, except a scant supply at Alamo Mocho, the first station after leaving the Colorado. In the middle of the plain they found a salt pool, approached through a thick, soapy quagmire, but the water was unfit for man or beast. This lake indicates at least a slight overflow at that time, and Major Emory reported that captured Spaniards who guided them told of a stream of running water some miles south of Alamo. This stream the Americans were unable to find (no overflow taking place so late in the fall), and their experience led them to announce the desert as almost wholly without water supply.*

But in 1849 came the rush of emigrant parties from the southern

*See the report of Major Emory, "Notes of a Military Reconnoissance," etc., Washington, 1848, pp. 100–102.

states through Texas and New Mexico along the Gila River trail into southern California, and these parties, pushing from the Colorado across the awful desert that separated them from the fertile lands of the coast, when midway on their course unexpectedly found themselves on the banks of a strong, turgid stream, which was not flowing toward the sea, but sweeping strangely northward into the interior. It was the sudden and dramatic resumption of the old Colorado inundations. They called it the "New River." Lieutenant Wilkinson, writing soon afterward in the Pacific Railroad Reports, says of this phenomenon of 1849:

"In that year the Colorado River was very high, and broke over a part of its banks between the mouth of the Gila and the head of the gulf. The waters flowed inland, running backward through the desert toward the center of the ancient lake. . . . The appearance of the stream was a subject of general surprise and wonder, and was an unexpected relief to the many emigrant parties crossing the desert that year. It is the general belief that this overflow was the first recent instance of the kind, but it had evidently often taken place long before, and there are many reasons for believing that it once flowed in a larger and stronger stream than it has since its existence became known." *

Since 1849 the overflow of the Colorado River has been frequent, and since 1890 uninterrupted every summer. By most dwellers in southern California this overflow is well understood, but very few are aware of the circuitous and remarkable route by which the water of the Colorado, through New River, reaches Salton Sea. High water in the Colorado comes in the months of May and June, and the break in the upbuilt banks of the river occurs 10 or 12 miles below the Mexican boundary line, near Algodones, an old Yuma Indian village, where now is a Mexican hamlet and a station for several customs officers. From near the point where the break occurs a comparatively small current, the East or Alamo River, cuts its channel westward for about 30 miles, and then turns northwesterly into the United States, and on its way to the Salton Sea fills a large depression known as Mesquite Lake. The greater part of the overflow, however, takes another direction, and sweeps southwesterly almost entirely across the lower part of the desert until it meets the slope of the Cocopah Mountains. Here it creates a long, shallow body of water, called Volcano Lake.

This point is the divide, where the desert slopes northward into the United States and southward to the gulf, and from this lake the

* Pacific Railroad Reports, vol. v; "Geological Report," by Wm. P. Blake, Washington, 1857, p. 100.

waters break away in both directions. The main current flows southward, and is called Hardy's Colorado, or the Hardy River. But when the overflow is at its height and the region about the lake has become a vast area of inundation, a splendid stream bursts away down the northern slope backward into the interior. This is the New River. Its main channel is accompanied by many sloughs, and wide areas for miles on each side of the current are submerged. Shortly after crossing the boundary line, the New River flows through a de-

LAND RECENTLY INUNDATED ALONG BANKS OF THE HARDY — THE COCOPAH MOUNTAINS IN BACKGROUND

From a photograph by the author

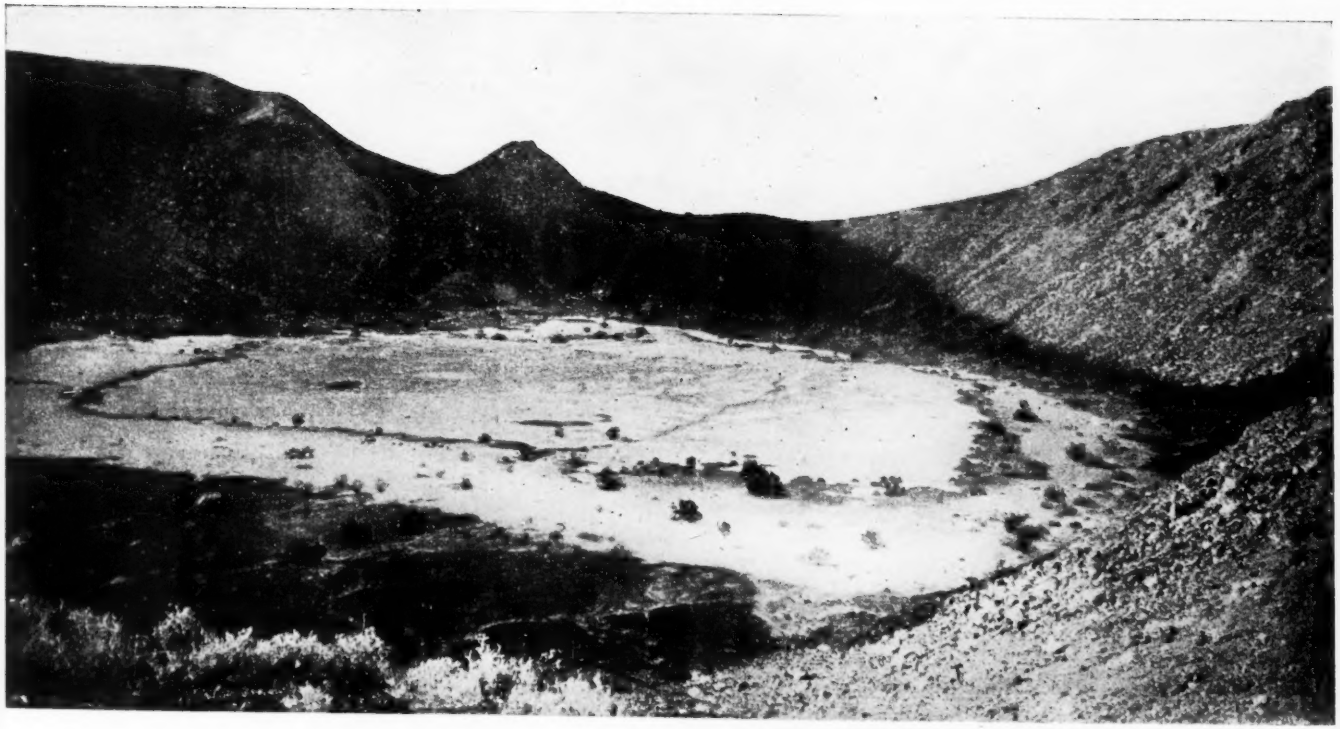
pression about half a mile long and 20 feet deep, known as Cameron Lake, and from here along its winding course northward are many lagoons and water-holes, for the most part pools of a few acres of extent, lying off the main channel and connected with the New River by short sloughs. They are surrounded by a growth of mesquite, and water in all of them lasts for many months after the New River overflow has ceased. Cameron Lake is one of the largest and deepest, and its waters have usually "held over" from one overflow to the next, the small, dirty, and reeking pool into which it subsides late in

the spring being the main reliance of desert travelers. The river, however, passes directly through the lake, and the loads of sediment which it deposits at every checking of its course are gradually filling up Cameron Lake and making it less reliable.

But even after the great summer inundation of the desert has subsided and Volcano Lake has become exhausted, the Hardy continues to be fed from the break in the Colorado through the Rio Padrones, and throughout the year its channel contains water. In summer and until late in the fall its current is from 100 to 200 yards wide and 20 to 25 feet deep, with a flow of at least two miles an hour in the center of the stream. Below the Sierra Madre it turns eastward, and joins the main channel of the Colorado again just above the gulf. At times of very high water a curious result occurs. Westward of the Cocopah Mountains lies a great depressed plain, lower than the Cocopah Valley, lower than the sea, the desert of the Laguna Maquata or Salada. Like the Colorado, it was lately an arm of the ocean. At the southern end of the Cocopah Mountains the Hardy sometimes overflows and sends a current around the foot of the range and northward into this low region, creating the Laguna Maquata. This desert of the Laguna Maquata is a desperately arid and forsaken country, almost without water, except during these occasional backsets of the Hardy.

The main lines of travel—the old San Diego road through Jacumba Pass and the Warner's Ranch stage road by way of San Felipe and Carriso Creek—meet on their way to Yuma at Laguna Station, pass by Indian Wells and Cameron Lake, and a few miles further on turn southward into Mexico and follow the Alamo wash to the Colorado River and Yuma. Scores of traveling teams continue to cross the desert each year along these old emigrant and government roads. The lower portion of the Colorado Desert, however, which lies in the Mexican Territory of Lower California and which extends from the boundary line to the gulf, is far less known and is, in fact, visited by few Americans or Mexicans. It is known as the Hardy River country or the Cocopah country, from the Indians whose *rancherias* lie along the Hardy Valley and the Lower Colorado.

We visited this interesting country in August, 1899. The overflow had been of unusual amount and of more than ordinary duration. New River was still a swift, roily stream that defied crossing with wagons. All night, in order to avoid the heat of the day, we had been pushing our mule teams across the sandy plains and rough mesas that make up those portions of the desert between the Sierra and the rich, level, fluviatile deposits of the central depression.



THE CRATER OF THE SIERRA PRIETA

From a photograph by Mr Frank Stevens

THE MUD-VOLCANOES OF THE HARDY — COLORADO DESERT

From a photograph by Mr Frank Stevens

Coyote Wells, a historic water-hole, was passed at midnight. The ruins of an old *adobe* hut and a couple of hacked mesquite trees amid the rock and sand gave suggestion of its former importance as a stage and emigrant station. The long, ghostly sand piles of Superstitious Mountain gleamed faintly in the moonlight on the left, while on the right, clear and beautiful, though miles away and below the line, rose the black dome of Signal Mountain. Daylight only made more clear to the eye the sterile and unredeemable character of this part of the Colorado Desert. Too high for the irrigating waters of the river, rough and hard with broken lava, and desolate with wind-piled sand dunes, it must always remain the abandoned area it is at present. By an imperceptible grade the way led down into soil that presented the firm, dry clay deposits of the ancient lake. The discovery of the overflow was unexpected and sudden. There was a wide glint of shallow waters that looked like mirage, then sheets of green things growing riotously in the warm air and wet soil, and a darker fringe of mesquite that bordered lagoons and river. There were in sight a thousand head of cattle recently driven in from the mountains, with heads deeply buried in the succulent herbage. Large flocks of waterfowl waded in the shaded margins of the lagoons and filled the air with their cries. The New River had overflowed its banks at this point, the cattlemen assisting the break by cutting in mesquite trees and damming the current, and swift sloughs, some 20 feet wide, were sweeping out over the plain and irrigating the region for miles. Cameron Lake and the lagoons were full to their brims and the country could be traversed only by making laborious circuits.

From Cameron Lake the trail turns southward, following in the main the channel of the New River. The Cocopah Mountains bound the valley for its whole length from the line to the sea on the west. The slopes and sides of the range appear to be utterly devoid of vegetation. Weathering and wind have broken its long mass into vast fragments of stone. Though occasionally exhibiting delicate tints of color, its general appearance is the sand gray and volcanic brown of desert formations. Groves of ironwood grow along its base amid the rough detritus that forms great alluvial fans. Elsewhere along the base of the range there is a vigorous growth of the "okatilla" (*Fouquiera spinosa*), curious clumps of long, whip-like stalks, devoid of foliage, but covered everywhere with thorns. The creosote-bush (*Covillea tridentata*) dots the sands. Far back in the cañons are groves of the tall and wonderful desert palms, indigenous to the Colorado Desert region, probably the *neowashingtonia filamentosa*.

As the way leads southward, Signal Mountain, the northern peak of the Cocopah range, disappears from view, but in front appears, rising from the plain, an isolated and striking landmark, the noble crater of the Sierra Prieta, called by Americans "Black Butte." Such active eruptions of lava as built up this perfect crater are indeed past, but secondary volcanic activity is still present in the hot mineral springs that surround the Colorado Desert and in the beautiful eruptive mud springs or *salses*, known as mud-volcanoes. These are found in two places on the Colorado Desert—in the Cocopah Valley a few miles from Sierra Prieta, and far north, just south of Salton Sea.*

The whole region of the Sierra Prieta is full of evidence of recent action. North of the mountain and half a mile from its base are three hillocks, the largest 100 yards long and 50 feet high, which were evidently formed by the eruption of soft mud accompanied by gas. The rock of these mounds is imperfectly hardened mud, full of vesicular cavities such as would be formed by the presence of gas in the mud eruption. The Sierra itself is several hundred feet high, and, with the deposits of broken lava that surround its base, has a circumference of seven or eight miles. The rock is scoriaceous lava, with occasional basaltic blocks that exhibit an imperfect culumnar structure. The rock of the sides is much broken by weathering, but the edge of the crater is beautifully defined. The floor of the depression is smooth and level and covered with fine clay, evidently blown in by winds. Water at times has stood at considerable depths within the crater. It is 250 paces across the perfectly circular bottom. At the center of the floor a small basin has been scooped out by human hands to collect the last drops of rain water.

The mud-volcanoes lie on a flat, mud plain south of the Sierra Prieta, and during the overflow are surrounded by the waters of the New and Hardy Rivers and the "salt slough;" also a few of the springs are buried beneath the risen waters of Volcano Lake. At the time of my visit one of these springs was erupting beneath the water, throwing up mud several feet above the surface with a cannonading that could be heard at a distance of three or four miles. Along the shores

* For an interesting description of their discovery by Major Heintzelman, in 1852, see Pacific Railroad Reports, vol. v; "Geological Report," by Wm. P. Blake, p. 115. See also "An account of some volcanic springs in the Desert of the Colorado in Southern California," by Dr John L. Le Conte, American Journal of Science and Art, 2nd series, vol. xix, May, 1855, and "Notes of a visit to the mud-volcanoes in the Colorado Desert in the month of July, 1857," by Dr John Veatch, in the same journal, vol. xxvi, p. 286, 1858, and also published in the Proceedings of the California Academy of Science, 1857, p. 104.

of the lake spurted jets of hissing steam, and little streams of hot water escaped from the fissures. Tiny monticules of mud were everywhere. At the edge of the water were four or five mud craters, 8 to 12 feet in diameter, filled with hot water, in which was a constant ebullition and escaping of gas. The bank was covered with black earthy deposits, and a curious reed grass grew at the edge of the water. The moist ground was everywhere hot and the tiny rivulets scalding. The retiring of the shores of the lake after the overflow has ceased leaves most of this ground dry during the greater part of the year. A small pool is left, however, whose waters assume a deep wine color, due, I should suppose, to deposits of peat derived from old growths of the reed grass. It is called the Laguna Prieta, or Ink Lake. At this place I noted that the retiring waters, trickling through a small basin, twenty feet across, had left it full of a beautiful deposit of sodium chloride, gleaming white and apparently pure.

The real center of activity is a quarter of a mile south of this point and on considerably higher ground. Barren sand-hills covered with broken pieces of lava girt a small amphitheater on the west, and low mounds of soft eruptive rock lie between it and the lake. The whole of the mud floor between is hard-dried and rough, gleaming white with salt incrustations and dotted with these mud-volcanoes. Some of the craters are beautifully shaped, running up to perfect cones, like mud beehives or gigantic swallows' nests. I counted some 70 in this plain. Many were quiescent, silent or nearly so. About 15 were very active, filled with boiling mud, which was thrown up to a height of 10 feet. On all sides there was the hiss of escaping gas, the explosive pant of steam blown off through countless orifices, and the rumple and splash of the surging mud. Except for the persecuting "stock flies" and the flocks of water-fowl that flapped and shrieked along the shallow margins of the lake, the whole region seemed absolutely devoid of living things. The print of an Indian's bare foot across the plain startled me with the sudden amazement of a Robinson Crusoe. In the midst of the *salses* was a deep pool of warm water, on the edge of which had been built a rude booth of reeds and a pole ladder that led down into the hole. I tried the bath. It seemed scalding hot, but proved only 118° Fahr. Near by was another clear pool—hot, salty, and nauseating to the taste.

For at least 50 years, and we know not how much longer before Major Heintzelman's discovery, these *salses* have been boiling and ejecting, and the heat that lies beneath them and gives them rise will

not subside for many decades. The volcanoes are doubtless immediately due to the infiltration of water from the Colorado overflow down to the heated beds of rock not far beneath. Converted into steam, these waters burst violently upward through the deposits of silt, and around their orifices throw up encircling walls of mud. The heated condition of the rock formations below the surface would seem to be due to the great delta accumulations here, and would seem to support the mechanical theories of the origin of crustal heat.

COCOPAH WINTER HOUSE AND BASKET GRANARIES — WITH CORN GROWING ON GROUND RECENTLY INUNDATED BY OVERFLOW

From a photograph by the author

Throughout the desert the inundated country produces a most astonishing growth of grasses, wild hemp, and weeds. A variety of tumbleweed (*Chenopodium*) grows to a height of ten feet in a few weeks' time. For months of the summer thousands of acres of the so-called desert are transformed into luxuriant meadows. The Cocopah Indians, who live along the right bank of the Hardy, as well as on sloughs further east and on the lower Colorado itself, raise abundant crops of maize, beans, and melons from the naturally irrigated

soil. As the water slowly retires and leaves a margin of damp soil, the Indian breaks small holes with a heavy pointed stick, at intervals of a few feet, and in these deposits a few seeds. The moisture and excessive heat combine to produce a rapidity of growth that is astonishing. It is the veritable beginning of agriculture, and one may learn here how such cultivation arose in the valleys of the Nile and the Oxus. Two hundred and sixty years ago, when these Indians were first seen by whites, they were planting and harvesting precisely as they do today.

The great meadows of the overflow are utilized in summer and fall by American cattlemen. Thousands of head of stock are driven in as soon as the inundation comes. Below the line and along the Cocopah Valley I saw a magnificent herd of 1,600, the property of San Diego cattlemen, which had been thriving and increasing in that region for several years.

The care of cattle on the desert gives rise to an occupation as arduous and hazardous as exists among human employments. Cattle-punching anywhere in the West is not an easy life; here on the desert of the Colorado its trials and dangers are multiplied. Feed and water become scant in late winter and spring before the overflow arrives; deathly want and scarcity settle down over all the country; the starving cattle grow restless under the grievous want; then comes the overflow, and hundreds of square miles of desert clay become the stickiest surface on the face of the earth. The cattle, miserably reduced and weak, are unable to pull themselves out of the mud in which they sink continually in their efforts to reach food and water. One cannot appreciate what it is to have stock "bogging down" until one has seen them sinking by scores in the bottomless clay of this inundated country. From daylight to dark the cowboy must be in the saddle pulling these foundered cattle out with *riata* and pony. For weeks his skin is hardly dry and his person never free from the thick incrustations of fluviatile mud. Difficulties lessen as the cattle become nourished and grow stronger, but throughout the summer there must be constant watchfulness. These young fellows live on a diet of coffee, baking-powder bread, and jerked beef roasted in the flames. At night they lie down on the ground and seek sleep in the cover of a smudge of cow dung as protection against mosquitoes. The few rude utensils and the stock of grub are packed in cowhide *alforjas* on the backs of *burros*, and the camp is located under the shade of mesquite bushes in some dry spot along a slough, close by the restless herds of cattle.

THE CHINESE PARADOX

By Harvey Maitland Watts

With the envoys at Pekin relieved, the first shock of surprise over, the world naturally inquires as to what infatuate madness led the Manchu conspirators to invite the attack of the great Powers. To the Caucasian mind, familiar with the everyday fact of the puissance and resources of the civilized world when acting as a unit, such an outbreak as that which has concentrated the attention of both hemispheres on China for three months seems an impossibility. To the Chinese mind, however, the attack was the most natural thing in the world, since it was made inevitable, if not actually invited, by the strange paradox of China's diplomatic relations with the outside world.

Explanations of the anti-foreign uprising there are in plenty. Every promoter who has taken tiffin with a taotai, every worldling who has golfed it or played polo at Shanghai, every ex-diplomat who has found his somnolence destroyed by the importunities of the religious enthusiasts, cries out against the missionaries. Not to be outdone, the missionary and the humanitarian publicists the world over declare the material greed of the Powers themselves is the determining cause, and each nation in turn is accused of being the evil genius which added the final straw that was too much for the Chinese camel's back. All these things were factors, it is true, in irritating the Peacock throne, but the cunning determination to kick over the traces, to cast aside all international responsibilities, was due wholly to the fact that by reason of diplomatic errors and oversights in the past China was never brought to realize its true status before the world. To the Chinese mind, the Powers were not the invincible entities which we deem them, but weaklings who had only to be terrorized once and for all, when they would trouble the "Middle Kingdom" no more.

This attitude was the real cause of the uprising, and the Manchu conspirators were able to take this position by reason of the striking fact, the potent paradox of China's relations with the outer world, that while by grudgingly granted treaty China occupied the position of a third-class state whose sovereign rights were limited by the extra-territorial rights of foreigners on its own soil, by imperial etiquette, by official procedure at Pekin, by use of all the artifice of an oriental

court at once childish and devilishly ingenious, the Manchu government was enabled to reverse absolutely the relative position occupied by the Treaty Powers and itself, and was in a position to assume and did assume the attitude of a superior state dealing contemptuously and condescendingly with its feudatories. This anomaly, which the Powers would better never have endured, so paralyzed the exercise of diplomatic relations that normally subsist between great nations that the position of any envoy in Pekin was always more or less impossible, and any insolence on the part of the Chinese always possible; for, arrogant and ignorant as was the Manchu court, it would never have dared to attempt to wipe the slate clean had not Chinese officialdom implicitly believed that the Powers, which for 40 years had allowed their envoys to be treated in a manner beneath the dignity of the states they represented, would not interfere were a drastic anti-foreign movement carried to a bloody success all along the line.

However small Chinese sovereignty was writ at the treaty ports, at the capital it not only saved "its face," but by forcing Europe and America meekly to accept its own vainglorious fictions as to the world—supremacy of the puppet "Son of Heaven," gained a prestige far from empty, in which were infinite possibilities of evil. Advantage was taken of the complaisance of the Powers as to what they considered were non-essentials, but which to the Chinese mind were distinct renunciations of national rights. The envoy who left his home capital in conscious pride that in him was personified the greatness of the country he represented, and that he was the embodiment of a high civilization, woke up in Pekin to find that, though he was surrounded by the revolting sights and smells and discomforts of twelfth century barbarism, by the pervading tyranny of convenient etiquette he was classed as an inferior person and was obliged to carry on diplomatic relations under such social and official disabilities as to cripple his usefulness and paralyze his initiative. Amazed, disgusted, and disgruntled, "cabined, cribbed, confined," his only consolation was that all his associates were in the same boat and had got used to it.

That the present crisis is directly the outcome of this paradox in international relations, events prove. All other causes—religious, economic, political—are secondary. As the feeling of contempt which the position occupied by the envoys invited grew, the reactionaries became bolder, and when they were successful with the *coup d'état* of 1898 and found that western complaisance endured it, they planned

the present outbreak, ingeniously directing the anti-dynastic "Boxer" movement against the foreigners. That too much stress is not laid on this issue, that its significance is not overestimated, is shown by the astonishing fact, revealed in the latest British Blue Book on the Chinese difficulty, that on June 6 last, when the envoys finally realized the ominous situation that confronted them since the Tsung-li-Yamen had practically thrown off the mask, they wasted precious time by a futile discussion as to whether they had a right, not being ambassadors, to demand an audience with the government itself. The spectacle is not a pleasing one. They were the envoys of the greatest nations of the globe. Since January an anti-foreign movement had been gaining ground, connived at by the highest officials in province and capital, and secretly supported by the government itself. The complicity of the government was evident in March. Every member of the diplomatic corps knew he was dealing with an inept and irresponsible government, to which duplicity was second nature, which would only yield to force or the threat of it, and yet so tied up was each man by the red tape of diplomatic tradition that he hesitated over points of etiquette! So humble, indeed, were the ministers in the face of Manchu impudence that all that Sir Claude MacDonald in his terrible dilemma could suggest on June 8 to Lord Salisbury was this:

"There is a disposition on the part of the diplomatic corps to request an audience in order to represent the seriousness of the situation to the throne, but as yet I am not aware whether this step will meet the approval of Her Majesty's government."

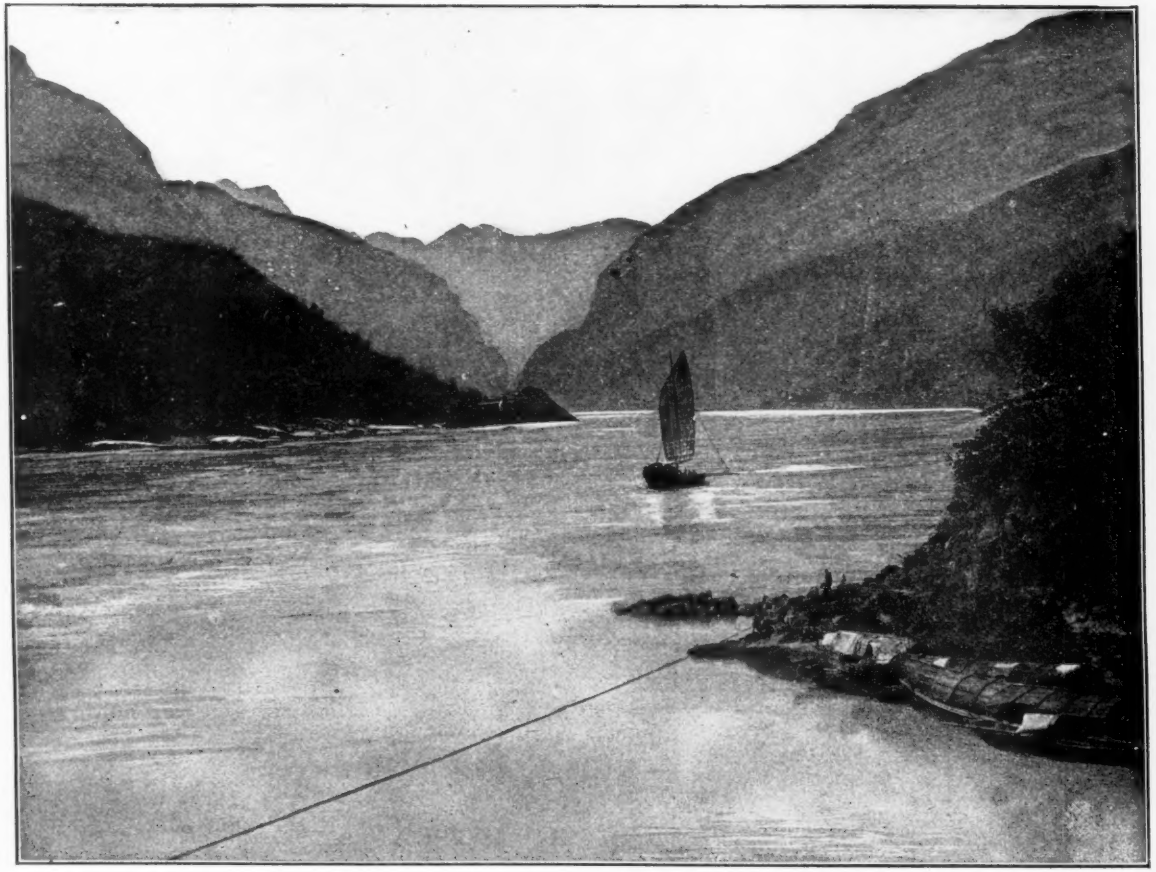
A day later the Empress and Tuan decided to kill the legationers; two days more and the women and children were huddled in the British legation compound, and within a week, consequent upon Seymour's failure to get through, the attack on the legations had begun. The envoys, in fact, could hardly have been more helpless had they actually been "tribute bearers from vassal states," as Chinese vanity has not hesitated to dub them. Their inaction, with its fatal consequences, was an echo of the past, and the home governments were equally easy-going. We now see that instead of frittering away precious time in June, all respect for the worn-out fictions of a conspiring piratical government should have been thrown to the winds, the issue faced, and the suppression of the anti-foreign movement demanded. Had this been done we should have been spared subsequent anxieties and the large outpouring of blood and treasure. But the tradi-

tional inertia of diplomatic conservatism that had existed since 1861 was too much for the ministers, and they hesitated, and Chinese diplomacy won the last throw and the reactionaries carried the day, fortunately, however, to their final rout when the might of the outraged nations was thrown against them.

As the Powers have hardly lost sight of the relative facts of the issues involved, this last outcome of 40 years of futile diplomatic attempt to live up to a vain make-believe will never be repeated. The elaborate superstructure of governmental pretense which had its habitation in the Purple Forbidden City has fallen as a house of cards, and cannot be set up again unless the Powers deliberately wish to undo the good work now under way. Whatever may be the final geographic adjustments, open or veiled, there must and will be an end of the diplomatic disabilities of the past. To be effective the readjustments of the foreign relations of China must be indicated by such a definite, unequivocal, visible demonstration of the actual dominance, the actual economic and political superiority of the western Powers, as to make an indelible impression on the imagination of the lay and official classes of China. It is the imagination that controls nations and peoples, and none have known this better than the very officials who under one pretext or another made patent to all Pekin the supposed subservience of the foreign Powers through the studied humiliation of the envoys. The long pupilage of the two boy Emperors, Tung-chi and Kuangsü, whose reigns are coincident with China's diplomatic contact with the West, played into the hands of the court, and hence made it difficult for the Powers to save themselves from a situation which has had its ridiculous as well as its tragic side. The peculiar relations that the nations put up with, it must be remembered, were first established in 1861, and it was not until 1873, after the envoys had been struggling for years with the newly organized Tsung-li-Yamen, purposely made an inferior board and assigned to service outside the walls of the Imperial City, that they were granted an audience with Tung-chi, then but 17 years old. At once the court officials raised the preposterous question of kotouing, though they knew full well no European or American minister would submit to such degrading abasement. Precedent was also against them, as Lord Macartney as far back as 1794 refused to perform the ceremony, and no European in modern times, save the easy-going Dutch in 1664, had yielded this point. No Manchu official expected they would in 1873, but broaching the matter was a part of

their diplomatic game, and, beaten in this, they got even with the Powers, as they view it, by receiving the envoys in the Hall of Tributary States, outside the royal palace.

Again, after Kuangsü came of age and an audience was agreed on in 1890, so little did the Chinese care for the facts of the case that the same hall was used, and, the ceremony being made even more belittling to the dignity of the envoys, they determined as a body never to submit to the imposition again. A few private audiences were held consequently under better conditions in the following years, but it was not until the Japanese war, in 1894, had pricked the Chinese bubble and had driven home a few needed lessons that the imperial government yielded its childish pretensions and received the envoys in the palace itself. The Powers, however, let the humiliation of the intercourse through the Tsung-li-Yamen continue, confirmed Chinese insolence by yielding continually until the collapse of 1898 and the succeeding intrigues—the flat refusal to lease Italy Sanmun Bay in March, 1899, though Italy's demand was supported by Great Britain, being the turning point—convinced the party of the Empress Dowager that it need not fear either united or determined action on the part of foreigners. Consequently the Manchu conspiracy, which had been under way for two years, came to a head in June, to the surprise of the very chancelleries that practically invited it and to the discomfiture of the envoys. Though revealed in imperial decree and forecast in political changes, when the crash came they sat helpless because there was no Gordius to cut the entanglements of the idle cêremonies by whose foolish fetters they felt themselves inextricably bound. They forgot that a paradoxical situation is never so mischievous as when those who know the falsity of its apparent relations accept the surface fact as final. But all this is past, and the Chinese paradox goes to join the august collection of exploded physical and political notions that had their day of evil obsession, but finally yielded to nineteenth century science and nineteenth century sense.



IN THE GORGES OF THE YANGTZE

From Commander Harrie Webster's collection of Chinese pictures

ONE OF THE MAIN AVENUES OF SHANGHAI

From Commander Harrie Webster's collection of Chinese pictures

COLONIAL GOVERNMENT IN BORNEO

By James M. Hubbard

It is now more than sixty years since there landed in Borneo a young missionary—not of the Gospel, but of good government. While voyaging in the Indian Archipelago in 1830 he was deeply impressed with the fact that these islands of unequaled beauty and natural resources were peopled with savages continually at war with each other and carrying on piracy on a vast scale. He determined to rescue some of them, if possible, from their barbarism by teaching them to respect and appreciate the value of law and order. And now, nine years after, he had come in a yacht, with a crew of twenty men, to carry out his Quixotic purpose. The time was apparently inopportune, as a rebellion of the Dyaks was in progress, but he offered his aid to the Sultan, and as a reward for his services was made Rajah of Sarawak. His first task after establishing his power was to reform the methods of government, to prepare a code of laws, and to develop commerce as the most effectual means of putting down piracy. He endeavored to make his native subjects understand that the main object of his government was not the commercial exploitation of the country or the amassing of colossal revenues, but the preservation and well-being of the people themselves; that their ruler would be a terror only to the disturbers of the general peace and to the enemies of the commonweal.

How has this strange experiment in ruling men of a low type of civilization succeeded? In attempting to answer this question I will not review the history of Sarawak since 1842, but simply describe the work of one of Sir James Brooke's successors.*

Charles Hose entered the Sarawak civil service in 1884 as extra officer in the Baram district, which had very recently been ceded to Brooke by the Sultan of Brunei. In 1890 he was made Resident, a post which he now holds. The district is about 10,000 square miles in extent, with a population probably not far from 100,000, and the governing staff consists of the Resident and an assistant magistrate—the only white men in the district—and about 20 or 30 Dyak "fortmen" or police. His principal executive duty is to put down murder,

* My information is derived from a paper read before the Royal Geographical Society last March and published in the *Geographical Journal*, and the remarks made upon it by Professor Haddon, the head of the Cambridge Anthropological Expedition which visited Borneo in 1898.

head-hunting, and theft. "If any of the interior tribes do a little head-hunting," says Professor Haddon, "Mr Hose starts away by steamer as far as it can go, then takes to canoes, and when he reaches the people he simply talks to them. They usually give themselves up or pay their fines—400 to 500 dollars for a life taken. What surprises the natives is Mr Hose's activity. He never loses a moment; when there is difficulty he rushes up at once with only a few 'fortmen'; still the people feel that he is a man they cannot tamper with and they give in. It is moral rather than physical force. The people who in the past were inclined to give the greatest trouble are at the present day the staunchest upholders of the government."

His chief aim, however, is "to bring peace to communities whose normal condition was one of mutual hostility." With this end in view he made a journey in 1898 to a hitherto unexplored part of his district to bring about friendly relations between his people and a tribe, the Madang, who have from time immemorial been at enmity with them. When he reached their principal village, consisting of nine long houses, with some two thousand inhabitants, he immediately accepted an invitation to stay with the chief, although accompanied only by hostile natives. These could not enter the houses until all the cases of blood-money had been settled between them. After long negotiations, during which "two men messengers were sent backwards and forwards to discuss the numbers of people killed on either side from time to time, and big gongs, shields, and weapons of all kinds changed hands as blood-money," peace was concluded. At a feast given on the following evening there were "some very good speeches made, their former troubles and differences being explained and discussed in the most open manner. Each chief spoke in turn, and concluded by offering a drink to another and singing a few lines of eulogy, the whole assembly joining in a very impressive chorus at the end of each line, and ending up with a tremendous roar as the bamboo cup was emptied."

The next day the Madangs collected a quantity of rubber for their first payment of tribute to the government, namely, two dollars per family. As there was no means of weighing it, they decided that the leader of Mr Hose's escort and two Madang headmen should act as assessors, and determine whether the piece of rubber brought by each person was sufficiently large to produce two dollars.

"It took these men," says Mr Hose, "the whole day to receive it all, and much counting was done on the fingers and toes. I would

mention that their method of counting is as follows: Some one mentions the names of all the families in each house, and as he does so a man tells each name off on his toes; when five have been counted, another man catches hold of the counted foot, and so on until his feet and hands have all been told off, when another man is used, and this continues until all the names are mentioned, when they halt to see how many men have been used, and where the last one ended." This extraordinary willingness to pay tribute on the part of savages who had never before seen a white man is noticed by Professor Haddon, who says that they pay it "because then they can feel that they are citizens of the Raj, they really do belong to the government, and barbarians are by no means fools. They know well that by paying two dollars a year they will have peace, be able to trade, and have all the advantages of a settled government, and they feel it is really a good investment for their money."

Before leaving, Mr Hóse arranged for a similar peace-making between the Baram and Madang chiefs at his official residence, Claudetown. This was done soon after, six thousand natives being present. At one of the meetings a Madang chief "made a very eloquent and remarkable speech, in which he explained that his people had for years been compelled to fight on all sides in order to hold their own, but were now fully able to appreciate the benefits of peace under the Sarawak government and of friendly intercourse and trade with the peoples of the Baram and surrounding districts—a condition of things which he would do all in his power to strengthen." The substantial outcome of this peace-making and the proof of the chief's sincerity was that last year 200 Malay traders went among the Madangs, who had collected large quantities of jungle produce, "and these very people, once so hostile to all, are now being used as a means to bring about friendly relations between our people and the border tribes." As Professor Haddon says, the barbarians are no fools, and native chiefs in the neighboring Sultanate of Brunei have time after time asked Mr Hose to persuade the Rajah to take over their territory, and natives living in Dutch Borneo, seeing how the people of Baram can live in peace and safety, are coming over the border in order to put themselves under the administration of Mr Hose. A few months ago he received a message from the principal chief of one of the most important border tribes, accompanied by a clod of earth, symbolizing the identity of his people with the races of the Baram. "The message he sent (translated literally) was to the effect that his people

were really the same as the Baram people, and that they were on the same soil. They had been divided and made enemies on account of mistakes and the foolishness of unimportant headmen, but he was anxious to meet the Baram people and glad to make peace. He intended visiting us at Claudetown, and if the Baram people wished to trade with the inhabitants of his district, he would be responsible for the former's safety during their sojourn in the Batang Kayan."

The secret of this splendid and almost unexampled success in ruling a savage race is to be found in the fact that "the confidence of the natives has been won and retained by an unbroken record of promises fulfilled and benefits bestowed." Thus they have been educated into the belief that the single aim of their white rulers was their welfare. "Since that belief was firmly established, native public opinion," to use Mr Hose's words, "has always been on the side of the government, and it is on the moral force of that public opinion that the whole framework" of Sir James Brooke's system of government rests. It should be said that the personal influence of the Resident is also an important factor in his success. He speaks six or seven of the Malay dialects—an important matter, for "you can never get at a man's heart if you speak through an interpreter." Professor Haddon testifies to his "wonderful energy and enthusiasm for the natives." He knows personally the greater number of the people of his district. Many come to him with their troubles. "Time after time promising young natives come down on a visit to Mr Hose and stay with him for days or weeks at a time, and in this way the people learn what a white man, a respectable white man, is like and what a government really means. Thus Mr Hose's residence is a sort of university, whither the pupils come from all parts of his district to learn a little as to the meaning of government."

Nor while attending to his official duties is he neglectful of other interests. He has prepared an admirable map of Baram District which has just been published by the Royal Geographical Society. Dr Bowdler Sharpe speaks, in behalf of the British Museum, of the "extraordinary efforts to advance science that have characterized Mr Hose's residence in Borneo. He has crowded into our museum enormous series of mammals, birds, insects, shells, and every kind of animal. Not only has he given to the British Museum the first fruits of his work during his sixteen years' residence in Borneo, but there is not a leading museum in the whole world that has not received collections from this indefatigable young man, second only to those given

by him to the British Museum, and these donations have proved of great importance to the countries he has benefited.' We may add also that this kind of government pays from the lowest material point of view. In 1898 the value of the total trade of the country was $9,174,898, a gain of over 130 per cent in ten years, while the government balance-sheet showed a surplus of $94,682.12.

Charles Hose is the type of ruler over races inferior to the white in intelligence and civilization which England has been assiduously educating for the past hundred years, and it is to her success in this education that the extent and stability of her tropical empire are due. This country is about to undertake to rule people of a similar race and characteristics to those in Borneo. We must raise up men like these Englishmen—men who will found a government of the people for the people supported by public opinion—or we shall fail as utterly as the Spaniards have done.

THE WATER SUPPLY FOR THE NICARAGUA CANAL

By Arthur P. Davis,

Hydrographer of the Isthmian Canal Commission

In the *Scientific American* for February 24, 1900, appears an article by Professor Angelo Heilprin, entitled "An assumed inconstancy in the level of Lake Nicaragua: a question of permanency of the Nicaragua Canal." This article purports to show, from old observations as compared with more recent ones and from theoretic considerations, that the level of Lake Nicaragua has very materially declined within recent years. A very conclusive reply, from a geological standpoint, by Dr C. W. Hayes, was published in the National Geographic Magazine for April, 1900.

In the *Scientific American Supplement* for May 19, Professor Heilprin rejoins with another article, in which he dismisses the arguments of Dr Hayes as insufficient, and attempts to show, from the observations published by the Nicaragua Canal Commission, that, independent of these arguments, the lake has declined 20 feet and 9 inches in level within the last nineteen years. To arrive at this conclusion, Professor Heilprin employs several assumptions in addition to the actual observations taken by the Commission. He gives a table, presumably based upon the report of the chief engineer of the Nicaragua Canal

Commission, page 65, showing a rate of inflow to Lake Nicaragua corresponding to the recorded rainfall at Rivas. This table was constructed by the chief engineer upon an assumption made by me and expressed as follows:

> While we have no conclusive data upon which to estimate the percentage of run-off to rainfall in the basin of Lake Nicaragua, it is well established as a general rule that in any given basin the greater the rainfall in a given time the greater the percentage of run-off, so that if the rainfall were increased 21 per cent the run-off should be increased somewhat more, say 25 per cent.—*Report Nicaragua Canal Commission*, page 295.

It will be seen that this is a mere assumption adopted for the want of any actual data, and, as should always be done in such cases, it is made on the side of conservatism, for the purpose of comparing the rainfall of 1898—the only year for which we have records of the fluctuations of the lake—with other years. If, however, this assumption should lead us into obvious absurdity, it should be modified or rejected, but up to the present time this necessity has not appeared.

The second assumption is that the Rivas rainfall is reliable and bears a reasonably uniform relation to the rainfall and run-off in the basin of Lake Nicaragua. This matter was discussed by me in the Report of the Nicaragua Canal Commission, page 297, where it is shown that the fluctuations are greater in quantity than is usual in other parts of the world, so that if this record is in error, it also is probably on the side of conservatism.

Professor Heilprin's third assumption is that the outflow from Lake Nicaragua in the seventeen years from 1880 to 1896, inclusive, averaged 42 inches per annum. This assumption is entirely gratuitous, apparently with no basis whatever, and, together with his table quoted from the chief engineer, leads Professor Heilprin to the astounding conclusion that the lake has declined 20 feet and 9 inches in nineteen years, or 249 inches. To reach this conclusion he has assumed a total outflow in that time of 798 inches, or 549 inches more than the alleged decline of the lake. A conservative estimate of the water required for the use of the canal is given on page 66 of the report of the Commission, showing that a liberal allowance for leakage, lockage, and power requires three inches annually from the surface of Lake Nicaragua, or a total of 57 inches for the nineteen years. When the canal is constructed provision will be made for storing the run-off from Lake Nicaragua so far as necessary, and Professor Heilprin's own figures show that 549 inches will be available where only 57 are required,

leaving 492 inches as a margin of safety. This is a coefficient of safety of about 9½, which ought to be regarded as exceedingly liberal.

As an actual fact, no one knows what was the discharge, either maximum, minimum, or mean, from Lake Nicaragua prior to 1898. We do know, however, that the San Juan River has been navigated for a period much longer than the Rivas rainfall record, and that always, within the last generation or more, it has been necessary to transfer freight over the rapids during the dry season and unnecessary to do this during the season of high water. These facts are based not only upon the testimony of such intelligent men as Hon. W. L. Merry, former superintendent of the transit company and now United States Minister to Nicaragua and Costa Rica, but upon the existence of the light-draft steamers and lighters used for these purposes at that time, which fully bear out the testimony that the regimen of the San Juan River, and therefore of Lake Nicaragua, has not materially changed within the memory of men now living.

If the conclusions drawn by Professor Heilprin are correct, Lake Nicaragua has been only a short time at its present stage, but in this alleged short time it has made a very marked and decided beach throughout the extent of its western coast. How, then, did it manage to leave absolutely no record of its stage twenty or thirty years ago?

But the crowning absurdity involved by Professor Heilprin's theory is that the old Spanish fortifications at Grenada, the wharf, warehouses, and a part of the city, as well as several villages and hamlets around the lake, must have been all constructed under water, since they are now less than 20 feet above the lake level.

It is a curious fact that, in order to clinch his argument and show that there is no probability of a recurrence of very wet years to make good the alleged loss from the lake, Professor Heilprin triumphantly quotes from Dr Hayes as follows: "So far as known, there is no evidence whatever that the rainfall has ever been greater in this region than it is at the present time." This quotation is employed at the close of an article which purports to show conclusively that the water supply to Lake Nicaragua *has* very greatly declined within a generation, and that therefore there *is* conclusive evidence that the rainfall has been greater in this region than it is at the present time.

MRS BISHOP'S "THE YANGTZE VALLEY AND BEYOND"*

By Eliza Ruhamah Scidmore

In these two volumes Mrs Bishop relates incidents of her travels in China during the years 1896 and 1897, including visits to Shanghai, Hangchau, and Ningpo, and along the regular tourists' route up the Yangtze to the head of steamer navigation and the Gorges. Mrs Bishop pushed on beyond this scenic region to Chingtu in Szechuen province, and from that western center went on to the wild mountain region to the northwest of it, where she encountered the mysterious Man-tze, people of another race, differing from the Chinese entirely, some forgotten Aryan offshoot. At this furthest interior point this intrepid woman-traveler traversed a district where no European had ever gone before, even the ubiquitous Jesuit missionary not having visited those villages.

It is a record of the direst discomforts and hardships that any woman ever deliberately encountered and willingly endured. The wonder grows, as one reads, that she should have remained in the province, should have followed her itinerary to the end, as she had planned it. Only escape from prison, or from an enemy's country in war time, would seem warrant for such repetitions of fatigue and exposure, with the barest necessaries of subsistence, under the most revolting conditions. For months Mrs Bishop slept in the worst rooms of the worst of Chinese inns, often adjoining and over the pigsty, and sometimes in it, and always obliged to take every precaution against the vermin swarming and the filth dripping from every side. Privacy, quiet, cleanliness, proper food, and baths were as impossible for her as for the Chinese, who have no need or longing for such luxuries. Often she went shivering to bed in wet clothes, often the roof leaked and storms blew in upon her, and once she went to bed when the winds and drafts in her bedroom blew out the candle. Tea and a bowl of wheat flour stirred up in boiling water constituted her breakfast, cold rice or a nibble of chocolate her luncheon, and dinner was a modest course of rice with curried meats or chicken. She lived on this fare during the months spent in small native boats and in a chair borne by coolies over the busy roads of Szechuen. Mrs Bishop did not travel in the conventional closed sedan chair of the country, but rode in an ordinary wicker armchair fastened to poles, as is shown in one of the illustrations.

When she discovered that such open travel was contrary to etiquette and custom, attracted unpleasant attention, and left her at the mercy of street crowds and mobs, Mrs Bishop did not abandon it, but valorously continued to run dangers the ordinary male traveler might avoid. Every indignity and discourtesy was put upon her by her boatmen at the start, and continued by coolies and street crowds throughout Szechuen province. All of Chinese rudeness, hostility, brutality, and insult was vented on this quiet, kindly disposed

**The Yangtze Valley and Beyond.* By Isabella L. Bird (Mrs Bishop), F. R. G. S., author of *Unbeaten Tracks in Japan, A Lady's Life in the Rocky Mountains, The Hawaiian Archipelago*, etc. With map and 116 illustrations from photographs by the author. 8vo, 2 vols., pp. 410, 365. New York: G. P. Putnam's Sons. $6.00.

traveler, but, although often disenchanted, she did not turn back nor abandon any part of her contemplated tour. As she wore Chinese woman's dress, with a Japanese jinrikisha coolie's hat, and European russet leather shoes under straw sandals, she naturally attracted attention and drew crowds of the curious; and Chinese mobs, not respecting her sex or her gray hair, pursued her savagely at times. "Child-eater" and "child-stealer" were the names shouted most often, and the cries of "Kill her!" and "Burn her!" were voiced in many a Szechuen city. Twice the mob pursued her into hiding places, pried open and battered down the doors, and Mrs Bishop had often to sit in some dark and noisome hole, revolver in hand, waiting for the last moment to come. Once a stone struck her and left her senseless and bleeding in her chair, and she suffered the effects for many weeks. Chinese officials tried to discourage and prevent her visiting remoter Szechuen, but she pushed on and on, into more hostile regions, encountering fresh assaults, more discomforts, hardships, filth, and horrors of every kind. The true traveler's spirit seems to have possessed her, and one would hardly look for greater zeal in a missionary seeking martyrdom for the sake of spreading the faith, or in an explorer who had happened upon an unknown country, discovered a new race, or found mines of fabulous richness. Marco Polo, Abbé Huc, and many travelers have written of the Szechuen country and the borderland of Tibet, but Mrs Bishop's narrative is the latest and a most interesting one, and she repeats all their praises of the scenery and fertility of that province.

Trade problems and statistics are woven in with the narrative, and as Mrs Bishop was everywhere the guest of the missionaries, one has a very clear picture of the mission work that is carried on in the far interior under conditions that would discourage any but the truest, most earnest Christians. She speaks encouragingly of the progress and results of mission work, and her testimony is the ablest and most appreciative that can be offered. Mrs Bishop struggles earnestly to make out a good case for the Chinese, to prove them a great and admirable people; but some of her experiences were too much for her plan of praise, and her readers easily understand when she says: "China, with its crowds, its poverty, its risks of absolute famine from droughts or floods, its untellable horrors, its filth, its brutality, its venality, its grasping, clutching, and pitiless greed, and its political and religious hopelessness, sat upon me like a nightmare." One follows less easily when she alludes to "a certain loveableness about the people"—the repulsive people, whose lack of all kind or admirable traits is shown so clearly in her daily life of travel.

After one frightful experience at the hands of a mob, Mrs Bishop complained that "these rows are repulsive and unbearably fatiguing after a day's journey, and always delayed my dinner unconscionably, which, as it was practically my only meal in the day, was trying." Also, "The mannerless, brutal, coarse, insolent, conceited, cowardly roughs of the Chinese towns, ignorant beyond all description, live in a state of filth which is indescribable and incredible, in an inconceivable beastliness of dirt, among odors which no existing words can describe. I wondered daily more at the goodness of people who are missionaries to the Chinese in the interior cities, not at their coming out the first time, but at their coming back, knowing what they come to."

Again says Mrs Bishop: "When night came, and I sat shivering in some fetid hole, not fit for a decent beast, with only a bamboo railing between it and the pigsty, I often thought Chinese traveling an utter abomination." And her readers fully agree, wondering the more with each page and chapter that Mrs Bishop should have remained in the midst of such abominations, when not driven and held to it by any vow, or contract, or obligation—enduring it all voluntarily, traveling in such ways, in such well-beaten tracks, for pleasure and interest only. "The interest of mixing in any fashion with the people far outweighed the discomfort of peasant accommodation, even when it was pretty bad," she says, and then mentions that "seven pigs occupied a depression railed off in one corner" of the room she occupied that night.

One has to regret that Mrs Bishop's literary skill should be spent upon such unpleasant subjects, such repulsive people and incidents, for the pictures are all too clear and realistic. Mrs Bishop saw with the keen, trained eye which notes and grasps every feature and detail, and she puts it before one as a strong, sharply cut photographic print. Every extenuating circumstance is made the most of for the benefit of the brutal, insolent people; not a tree, plant, or flower escaped her, and the rocks, and stones, and soil were equally observed. There was magnificent mountain scenery as she went further west toward the snowy range, and her descriptions are charming, full of color and vivid reality. The cost of this independent travel was not great, seven shillings a day being the average of chair travel and wayside accommodations. Everywhere she encountered poppy culture and opium smoking, and the chapter devoted to the opium poppy at the end of the narrative is one of the most interesting in the book. Mrs Bishop at the close expresses the kindest and most hopeful sentiments for the Chinese, doubts that the break-up or the decay of the empire has come, and sees some hope of the awakening of this enigmatic race.

THE city of Shanghai is of nearly the same latitude as Mobile, Alabama, Morocco, and Alexandria, Egypt, and in climate and luxuriance of plant life much resembles these western cities. The town lies at the southeastern end of a wide plain, the Kiangsu province, which has often been described as "the garden of China." In the variety and wealth of its fruits and vegetables it is not unlike southern California. From the neighboring fields, rice, grain, and cotton have been the principal crops, but of late the demand for cotton and the good prices offered for that staple by the mills recently built at Shanghai by foreign capital have induced the farmers to give up the cultivation of rice and grain and plant cotton instead. Shanghai is the commercial center of the most densely populated section of the empire, 500 to 800 inhabitants to the square mile being a fair estimate of the density of the population. The imports in 1898 of this city reached $90,000,000, thus exceeding in value the entire imports of the rest of the empire. Canals, rivers, and creeks, penetrating in all directions, converge toward Shanghai, affording easy communication for hundreds of miles. Twenty-five years ago the river opposite the city was about 1,800 feet broad at low water, but today cannot exceed 1,200 feet. The depth of water on the bar, averaging only 19 feet and rarely reaching 23 feet, causes much loss to shipowners because of the detention of steamers.

FOREST RESERVES OF THE UNITED STATES

In the United States today 70,761 square miles of territory—that is, an area considerably greater than the combined area of the six New England states—have been dedicated by Congress for forest preservation. Most of this land is rugged and mountainous, and hence of little value for cultivation, but especially fitted for tre growth. The splendid work being done by the U. S. Geological Survey to determine the resources of the Forest Reserves is graphically described in the recently published official reports for 1897–'98 and 1898–'99 of Mr Henry Gannett, Chief of the Division of Geography and Forest Reserves of the Survey.* Of this immense area, wild and in places almost inaccessible, more than one-half has been scientifically explored. The density of timber, the variety of wood, the amount of merchantable timber, the burned areas, the land reforesting and the land on which trees are not springing up again, the quality of the soil—all these and many similar facts that must be ascertained before the reserves can be properly developed have been carefully examined and noted. The condition of woodlands in different states has also been investigated. As a result many impressive facts have been gathered.

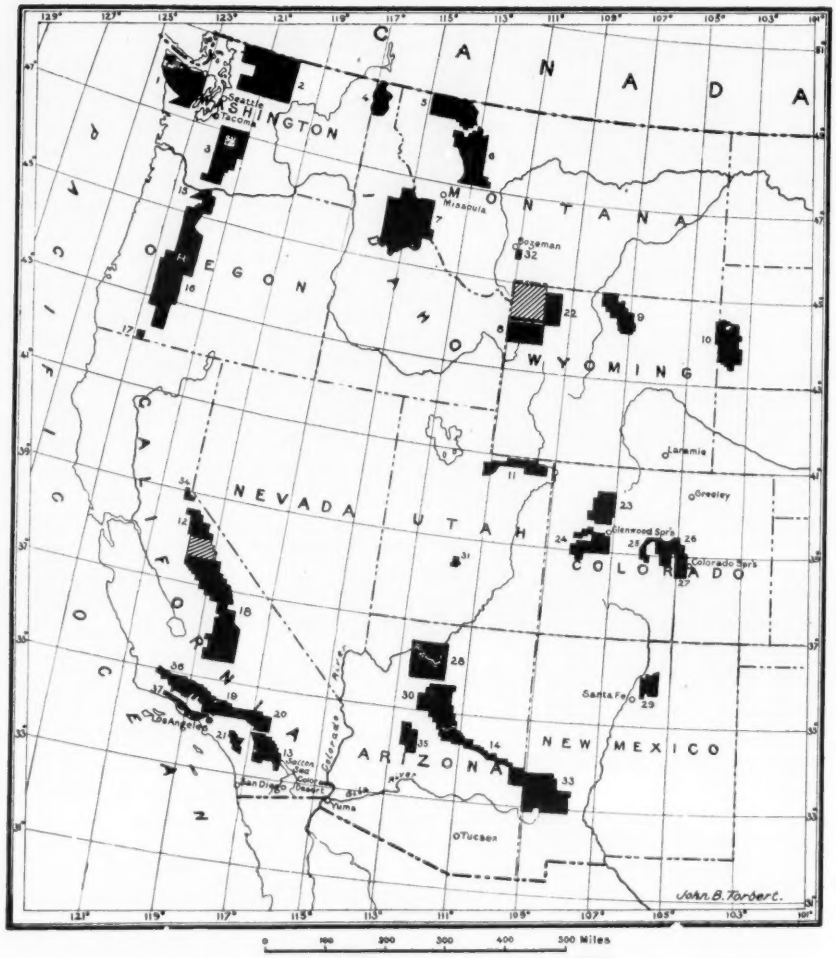
In the state of Washington the forests are among the densest, heaviest, and most continuous in the United States. The trees have a thickness of 12 to 15 feet, and are, as a rule, 250 feet high, their trunks often shooting upward for a hundred feet without a branch. Mr Gannett estimates that since lumbering began in the state 36,000 million feet B. M. have been cut; but within the same period, or less than a generation, 40,000 million feet B. M. have been destroyed by fire. Thirty million dollars have thus been lost to the people of the state.

The report for 1898–'99 forms a sumptuous volume of 498 large octavo pages, handsomely illustrated with 200 pictures from photographs. Twenty-seven maps of the different reserves and, in a separate pocket, eight larger maps, show by gradations of color the classification by land, etc. In addition to the general report of Mr Gannett, there are included special papers by John G. Jack, George B. Sudworth, H. B. Ayres, and John B. Leiberg. A more detailed review by Mr Gifford Pinchot of the volume for 1897–'98 follows.

Perhaps the most notable forest publication of recent years is the fifth part of the Nineteenth Annual Report of the U. S. Geological Survey. This volume is the first fruits of a study of the national forest reserves that has been conducted by the U. S. Geological Survey since 1897. It contains, besides special reports on ten reserves and a note on the timber of Pine Ridge, Nebraska, an article on "The Forests of the United States," by Henry Gannett, Chief of the Division of Geography and Forestry, under whose direction the work has been carried out. It is with Mr Gannett's article alone that I wish to deal in this note.

* *Nineteenth Annual Report of the U. S. Geological Survey, 1897–'98.* Charles D. Walcott, Director Part V. Forest Reserves. By Henry Gannett.

Twentieth Annual Report of the U. S. Geological Survey, 1898–'99. Charles D. Walcott, Director. Part V. Forest Reserves. By Henry Gannett.



No.	Name.	Area in sq. miles.
	Afognak (Alaska)	
17*	Ashland	29
24*	Battlement Mesa	1,341
9*	Bighorn	1,762
7*	Bitterroot	6,480
10*	Black Hills	1,893
14	Black Mesa	2,592
15	Bull Run	222
16†	Cascade	7,020
31	Fish Lake	106
5*	Flathead	2,160
32	Gallatin	63
33	Gila	3,636
28	Grand Cañon	2,893
34	Lake Tahoe	213
6*	Lewis and Clarke	4,572
3*	Mount Rainier	1,655
1†	Olympic	3,006
29	Pecos River	673.5
27*	Pikes Peak	288
36	Pine Mt and Zaca Lake	2,569.6
26*	Plum Creek	280
35	Prescott	662
4*	Priest River	1,008
20*	San Bernardino	1,152
30	San Francisco Mts.	1,524
19*	San Gabriel	868
37	Santa Inez	227
13*	San Jacinto	1,152
18	Sierra	6,400
25*	South Platte	1,068
12*	Stanislaus	1,080
8*	Teton	1,296
21	Trabuco Cañon	78
11	Uinta	1,368
2*	Washington	5,616
23*	White River Plateau	1,872
22†	Yellowstone	1,936
	Total	70,761

* Examined by U. S. Geol. Survey. † Examined in part by U. S. Geol. Survey.

Since the publication of Sargent's monumental volume in the Tenth Census and the gradual but inevitable recognition of the fact that his results were by their very nature subject to extensive revision, estimates of forest area and of standing timber in various portions of the United States have been frequently repeated. So far as the present writer is informed, a very large majority of these estimates have been altogether guesswork. Mr Gannett's paper, on the contrary, is based on a complete compilation of the available facts. We have here a statement of the wooded area and merchantable stand of timber in the United States based on definite sources of information. A remarkably skilful use has been made of old data and an immense amount of new information, supplied to Mr Gannett either by his own fieldmen or by railroad companies and other holders of timber lands, is now published for the first time. The use of the old and new together has rendered possible what is by far the best statement yet made of the forest condition of the United States.

Under the head of "Wooded Areas, by States," following a brief introduction, there is given an admirable summary of the total land area and the total wooded area of each state, with a statement of authority in every case. These figures show that the United States has now 37 per cent of its total area in wood, or, in round numbers, a million square miles. Contrasted with previous estimates, which have usually been about 25 per cent, this estimate is extremely satisfactory.

It is unfortunate that the description of the merchantable standing timber in the United States cannot be made as complete as that of the area of woodland. Mr Gannett has compiled, however, all the information which has been gathered, and the result is a table of the first interest. There follows a discussion of the consumption of timber, which reaches an annual value of about $800,000,000, an amount slightly in excess of the mineral production of the country. The enormous progress of the lumber industry in the northwest is illustrated in a tabular view, which indicates that in 1870 the value of the lumber product of Washington was worth about $1,000,000; in 1880, about $2,000,000, and in 1890, about $15,000,000.

Mr Gannett's paper concludes with synopses of the reports included in the volume, of which those on the forest conditions in the states of Washington and Oregon are especially noteworthy. To reach an estimate of the stand of timber in the former state, Mr Gannett made or collected and compiled actual timber cruisings of more than a million and a half acres, and is consequently in possession of a body of facts altogether without parallel. He gives tables of the stand of merchantable timber, the logged area, the naturally bare area, and the burned area, together with definite figures for the stand of timber for each of the timber counties. A summary of these tables shows that more than 114 billion feet are now standing. Another most significant result is that within recent years 20 per cent of the merchantable timber of the state has been burned, or enough to supply the whole United States for two years. In Oregon the timber area is larger and the stand per acre heavier on the average than in Washington, the actual merchantable stand being estimated at 235 billion feet. Fires have been but little less destructive here than in Washington.

The value of Mr Gannett's report consists as much in its method as in its

matter. Here is a statement of definite facts and of conclusions drawn from them in clear and simple words, marking a new step in the statistics of forests in this country. Undeterred by the evident paucity of information, and with a degree of skill of which I cannot speak too highly, Mr Gannett has given us the best there is in the most practical form. He has had the coöperation and assistance of an admirable corps of men in his own division, of whom Graves, Sudworth, Ayres, and Leiberg are of national reputation in forestry, but he has succeeded in obtaining results from other sources so extensive that without them his work would have been altogether impossible. To the men who have supplied these results, and especially to Mr Thomas Cooper, of the Northern Pacific Railway, it is but fair to acknowledge our debt.

GIFFORD PINCHOT.

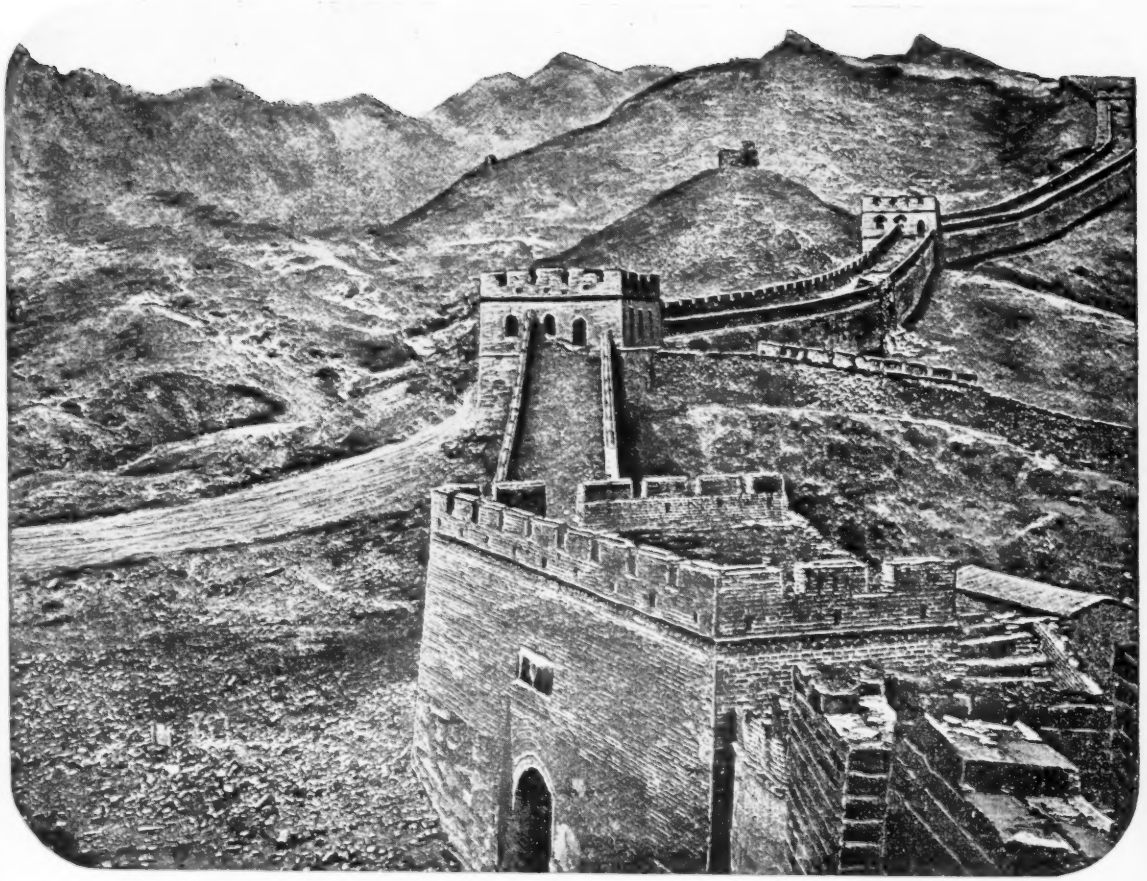
THE GREAT WALL OF CHINA*

The great wall of China was built at a time when the wild tribes of north-eastern Asia were pressing forward into the lowlands, whither their kinsmen had gone centuries before. It most probably consisted originally of a line of detached earthworks, which some able ruler or captain strengthened and connected so as to present an unbroken line to the public enemy. It is said to have been finished 205 B. C. by Tsin Chi-Hwangti, and to be nearly 1,600 miles long. The Chinese call it the "Ten-thousand-li wall," and if it really had any such length, it would be something over 3,500 miles long.

It is from 25 to 30 feet high, 15 to 20 feet thick, and revetted, outside and in, with cut-granite masonry, laid in regular courses, with an excellent mortar of lime and sand. It is surmounted by a parapet or battlement of gray burned brick 18 or 20 inches thick, covered with moss, and pierced with crenelated openings for the defenders, whether archers or matchlockmen, to fire through. The rear or inner revetment wall is also furnished with a lower parapet, but it is not crenelated. The top is paved with a double layer of brick about a foot square. The inside of the wall is made of earth and stone well rammed in. Every 200 or 300 yards there is a flanking turret 35 or 40 feet high, projecting beyond and overlooking the face of the wall in both directions, and near each turret is a stone staircase leading down between the walls to a door opening upon the ground to the rear.

The most astonishing thing about it is, however, that it climbs straight up the steepest and most rugged mountain sides, courses along their summits, descends into gorges and ravines, and, rising again, skirts the face of almost inaccessible crags, crosses rivers, valleys, and plains in endless succession from one end of the empire to the other—from the seashore on the Gulf of Pechili to the desert wastes of Turkestan. No spot is left unguarded or uncovered, and, no matter how fierce and active were the wild tribesmen who assailed it, or how innumerable were their armies, it is evident that it could, if well defended, even by men armed with nothing better than stones, defy the world up

* From *China*, by James H. Wilson. New York: D. Appleton & Co.



THE GREAT WALL OF CHINA

From Commander Harrie Webster's collection of Chinese pictures

to the day of gunpowder and artillery. It is laid out in total defiance of the rules of military engineering, and yet the walls are so solid and inaccessible, and the gates so well arranged and defended, that it would puzzle a modern army with a first-class siege train to get through it if any effort whatever were made for its defense.

The simple problem of cutting the stone, making the brick, and transporting them to the wall must have been a sore puzzle to those who had it in hand, and it is almost impossible to conceive the means by which the water used in making the mortar could be carried to the mountain tops across such a rough and arid country. It is, of course, known that the movement which crystallized itself in that way was a national, if not a popular, one, and that it was carried through by contingents of men from the various provinces, the men being paid and subsisted by the provinces to which they belonged till they had finished the task assigned them.

GEOGRAPHIC NOTES

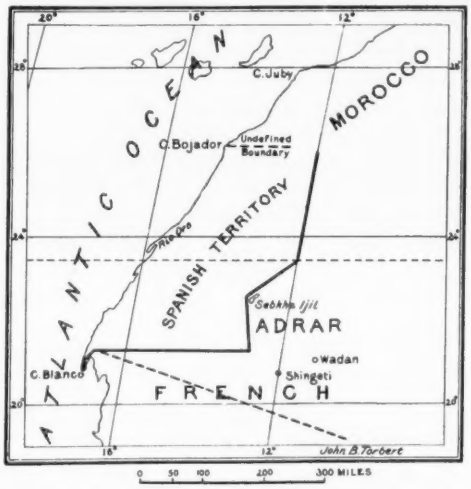
FRANCE has of late become somewhat alarmed at the invasion of Tunis by thousands of Italian farmers and peasants, which if continued will endanger her commercial and political supremacy in central north Africa. It is estimated that in the last two and a half years no less than 10,000 peasants from Sicily and southern Italy have entered the country. They have for the most part acquired and settled upon land along the main routes to and not more than 150 miles distant from the capital, Tunis. The French in Tunis, including soldiers and their dependents, do not exceed 30,000.

Notes on China, a brochure issued by the Adjutant General's Office of the War Department, is a condensed compilation of many facts of interest about the Chinese Empire. The Chinese Army, the permanent military organization, the provincial militia and irregular forces, the forts and arsenals, and the Chinese Navy are well described. A brief description of 20 cities that for strategic and political reasons are most prominent is also appended. A valuable feature of the book is a map, on a scale of two and a quarter miles to the inch, of the Peiho from Taku to Pekin. Persons desiring copies of the report should apply to the Military Information Division of the War Department.

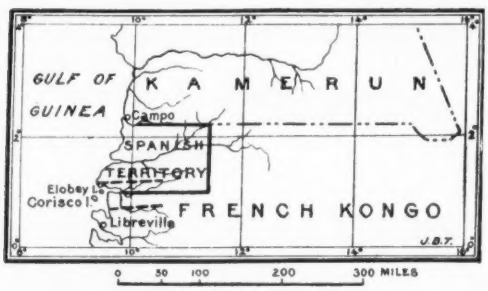
DR NANSEN is at present with Dr Johan Hjort in the *Michael Sars* cruising in the Arctic Ocean. The object of the trip is to study the habits and migrations of the cod and to take hydrographic observations in a portion of the Arctic Ocean between Spitzbergen and Iceland that has never been mapped. Although Dr Nansen has no official position in the expedition, it is understood that he will conduct the hydrographic researches. The *Michael Sars*—named after Dr Nansen's father-in-law, a professor of "fishology"—was built and especially equipped for the Arctic Ocean by the Norwegian government. The expedition sailed some weeks since from the southern part of Norway in a northwesterly direction. Between the Shetland Islands and Iceland Dr Hjort hopes to locate new cod banks and to discover the spawning place of these fish. Then the

ship will sail northeast, and Nansen will conduct his researches between Iceland and Spitzbergen and endeavor to supply the missing link which will connect his work on the *Fram* with that of earlier Norwegian and British investigators.

SEVERAL changes in the map of Africa were made by a convention signed between France and Spain on June 29. In 1885 the Spanish seized the northwest coast of Africa from Cape Blanco northward to about Cape Juby. They gave their new possession the name of Rio de Oro, after a bay thus christened by the Portuguese in the fifteenth century, though neither gold nor a river were to be found there. The following year they pushed into the interior and signed a treaty with the people of Adrar, but they did not inform the European powers of the treaty. In successive years Adrar was overrun by French explorers and thus fell under French influence. By the terms of the convention now concluded, the boundary runs from Cape Blanco in a straight line eastward to about 13° longitude, thence to the northwest around Sebkha Ijil, a dry salt lake, then due east to the 12th meridian, which it follows to Morocco, where it becomes indefinite, as the boundary between Morocco and Rio de Oro is not defined. The territory in northwest Africa credited on current maps to Spain is thus considerably reduced by the convention.



Projecting into French Kongo is a small bit of Spanish territory. Spain has always claimed that her rights extended further into the interior, almost to Ubangi, but with the exception of the islands Elobey and Corisco she has never exercised any jurisdiction over this land. France has never recognized the title of Spain to any of the mainland, and on French maps only the islands Elobey and Corisco are given as belonging to Spain. By the terms of the new treaty, however, Spain acquires about 1,000 square miles, the northern boundary of her possession touching German Kamerun. France gains the privilege of purchasing the piece if Spain ever desires to be freed of it.



WHILE with every other quarter of the world the export trade of the United States is increasing at a phenomenal rate, with South America it has remained almost stationary since 1890. In 1890 the United States sent goods to the value of $38,752,648 to that continent, but during the twelve months, July 1, 1899–June 30, 1900, the value of goods exported thither reached only $38,945,721—that is, in the last ten years the value of the export trade to South America has increased less than half of one per cent; this, too, notwithstanding the good work of the Bureau of American Republics, founded in 1890 "for the prompt collection and distribution of commercial information concerning the American republics." The exports of the United States to the nations of Europe during 1899–1900 show an increase in value of 52 per cent over the exports of 1890, their value in the fiscal year just ended being $1,040,167,312, as against $683,736,397 in 1890. The export trade with Asiatic peoples has in the last ten years increased 229 per cent, being valued at $19,696,820 in 1890 and $64,913,984 in 1899–1900, while the exports to Africa were $4,613,702 in 1890, and are now $19,469,109, an increase of 321 per cent.

The four great facts in the foreign commerce of the United States for the year ending June 30, 1900, as summarized by Mr O. P. Austin, are:

1. The total commerce of the year surpassed by $317,729,250 that of any preceding year, and for the first time in the history of the United States exceeded two billion dollars.
2. The exports exceeded those of any preceding year, and were more widely distributed throughout the world than ever before.
3. Manufacturers' materials were more freely imported and formed a larger share of the total imports than ever before.
4. Manufactured articles were more freely exported and formed a much larger share of the total exports than in any year since the United States became a nation.

IT is a strange coincidence that the world's production of gold during the last half of the nineteenth century should exceed the output during the first half in the ratio of "16 to 1." In figures the production for the fifty years ending with 1899 was $6,596,832,000, as against $787,460,000 for the preceding fifty years. The production of gold during the last half of the nineteenth century was also more than double that during the 360 years following the discovery of the American continent, the total output from 1492 to 1850 being $3,159,230,000. In 1899, for the first time since the phenomenal production of the California mines in 1853, the amount of gold mined in the United States, including Alaska, exceeded the production of that record year. The gold mined in the United States last year was valued at $72,500,000, or seven and one half million dollars more than in 1853.

THE comprehensive dictionary of the Natick (Indian) language of Massachusetts, on which the late James Hammond Trumbull spent many years of labor, is to be published by the Bureau of American Ethnology. With the exception of the famous Eliot Indian Bible, this is the most interesting and valuable record of the language of the Indians of New England.

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The following form is enclosed for use in the nomination of persons for membership. *Please detach and fill in blanks and send to the Secretary.*

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.....*1900*

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